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November 1989

Railway Age

...for the new age of railways and rail transit

Statistical Reference Index
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Santa Fe intermodal: Big, getting bigger

Paducah & Louisville: A regional winner

CP's aim: "On Time, All the Time"

California in transit: Light and rapid rail

November 1989

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Cover: photo courtesy of Santa Fe.

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INSIDE

"Stop beating up on each other"

LUTHER S. MILLER

What must railroads do not only to stay alive but to thrive in a fiercely competitive transportation world that sometimes seems hopelessly tilted toward trucks?

Improve service...reduce costs...forge labor-management partnerships, embrace state-of-the-art-technology: These are some of the answers that come readily, almost ritualistically, to mind.

Santa Fe President Mike Haverty probably would have no quarrel with any of the above—Santa Fe has been aggressively innovative in all of those areas. Indeed, it is a combination of these things that has helped Santa Fe this year reduce its operating ratio from 90.2% to 86.8%, and to post third quarter operating income of $73 million, making this its best quarter in five years.

But it was not one of these answers that leapt to Mr. Haverty's lips when *Railway Age* Senior Editor Gus Welty recently asked him what railroads need to do to succeed. What he said, instead, was this:

"Railroads have to stop beating up on each other for a slice of the transportation pie that keeps getting smaller. I'm a guy who doesn't think this has been very smart, with railroads cutting rates against each other...and sometimes then cutting services [with] truckers skimming off the high-rated traffic."

Mr. Haverty, in an interview that is this issue's cover story (p. 27), had some highly specific suggestions as to how railroads can work with, rather than against, each other to build traffic.

One of these, he said, is the VCA (voluntary coordination agreement). He noted that Santa Fe already has a VCA with Burlington Northern that "has allowed us to go into the Southeast and allowed BN to go into the Southwest with what is basically a single-line service"—an example, he said, "of how you can reach out and expand your markets, short of a merger."

And he would go beyond the VCA, if necessary, to win highway traffic:

"I've made it clear that where there are opportunities to go out after truck traffic, we're willing to work with any railroad. We're also talking about situations where two railroads have parallel main lines and both roads could use the same line. This would make use of excess capacity and it would reduce expenses for both companies. It makes sense to me that if you're really going to go after truck traffic, you have to reduce expenses while you maintain or improve service."

High-quality intermodal service is the most direct way to siphon traffic from the highways, and it is here that Santa Fe has compiled an uncommonly impressive record, due partly to circumstance. As Mr. Haverty observed: "We are not blessed with a tremendous amount of coal traffic. Grain is good..but those markets fluctuate. We are not a railroad with a tremendous amount of industry located on line. So if we are going to grow, a big part of that growth has to be in intermodal." Today, he said, intermodal is providing "about 40% of our revenues and it's only a matter of time—probably not much time—before intermodal accounts for more than half of our freight revenues."

Clearly, if there's a mode of transportation that Mike Haverty wants to beat up on, it's not his own.

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Member of

Equipment

Burlington Northern: Placed an order with Union Switch & Signal for 25 AVI (automatic vehicle identification) systems based on technology developed by Amtech (*RA*, Oct., p. 37). The order calls for 25 US&S Shadow controllers, 4,000 associated tags, and nine programmers for use with locomotives, end of train devices, cabooses, air repeater cars, and fuel tender cars. BN is expected to order another 26 readers in 1990.

Itel Rail: Placed an order with Gulf Railcar of Houston for 150 new, 23,500-gallon, exterior-coiled and insulated tank cars.

Metropolitan Dade County: Will build two extensions totaling more than 2.5 miles to the Miami Peoplemover system. AEG Westinghouse Transportation Systems will supply 15 vehicles (with an option for two additional vehicles) and other components under a $54 million contract. The county will design and construct the guideway and a total of 12 new stations. (Details p. 22).

Norfolk Southern: Ordered an additional 1,000 open-top hopper cars from Trinity Industries for delivery beginning in first quarter 1990. The railroad earlier placed orders with Trinity for 1,400 open tops for coal haulage; they are now being delivered.

NJ Transit: Now has 15 ALP-44 electric locomotives on order from ABB Traction at a cost of more than $61 million. NJ Transit recently added six units to its original order for nine. The first locomotive, which is nearing completion in Vasteras, Sweden, is to go into revenue service in February 1990. All of the remaining units will be delivered by December 1990. The ALP-44 locomotive is based on the AEM-7 units in service on SEPTA, MARC, and Amtrak between Washington and New York.

Facilities

Grand Trunk Western: Ordered a Modular Locomotive Simulator from DSL Dynamic Sciences Limited. The simulator will be installed in a trailer. DSL's standard Modular Simulator system comprises a base package and a series of modules which can be ordered with the base package or added at a later date.

Revenue freight carloadings

Commodity	Oct. 14 week	Oct. 7 week	Sept. 30 week	Sept. 23 week
Grain	29,439	26,775	25,837	24,522
Other farm products	2,889	2,468	1,963	1,600
Metallic ores	17,353	16,267	17,625	19,967
Coal	134,432	132,344	135,130	132,352
Crushed stone, gravel and sand	18,460	18,040	17,277	17,580
Nonmetallic minerals	10,404	10,417	9,935	11,866
Grain mill products	9,686	10,052	10,098	10,006
Food and kindred products	8,837	8,826	8,750	8,756
Primary forest products	9,334	8,956	9,237	9,399
Lumber and wood products	6,093	6,114	7,258	6,731
Pulp, paper and allied products	10,292	10,284	10,317	9,946
Chemicals and allied products	27,450	27,906	27,669	27,472
Petroleum products	5,430	5,236	5,553	5,096
Stone, clay and glass products	11,457	11,001	11,178	11,213
Coke	5,485	5,626	5,677	5,772
Metals and products	9,209	9,741	9,599	9,444
Motor vehicles and equipment	18,275	18,004	19,537	19,453
Waste and scrap materials	8,721	8,045	8,002	8,860
All other carloads	7,609	7,270	7,170	6,803
Total Cars Loaded	**351,855**	**343,374**	**348,612**	**346,837**
% change from previous year	(1.4)	(3.1)	(4.3)	(3.1)

		% change
Cumulative total: 41 weeks	13,673,962	(1.4)

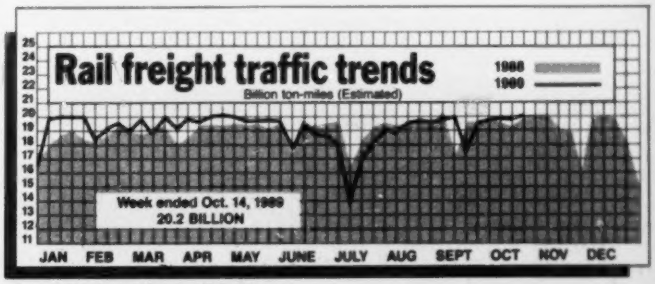
	Oct. 14	Oct. 7	Sept. 30	Sept. 23
Estimated revenue ton-miles (billions)	20.2	19.8	19.9	19.8
% change from previous year	.5	(2.0)	(2.9)	(2.5)

Total:	1989	1988	% change
41 weeks	785.3	786.7	(.1)

Intermodal traffic

	Oct. 14	Oct. 7	Sept. 30	Sept. 23
Trailers	71,732	76,726	75,658	72,636
Containers	53,343	53,271	51,300	50,735
Total	**125,075**	**129,997**	**126,958**	**123,371**
% change from previous year	5.0	6.2	(.7)	1.8

		% change
Cumulative total: 41 weeks	4,668,822	3.1



Source: Association of American Railroads

Freight cars

	DELIVERED 3rd quarter 1989	DELIVERED 3rd quarter 1988	ORDERED 3rd quarter 1989	ORDERED 3rd quarter 1988	ON ORDER AND UNDELIVERED Oct. 1 1989	ON ORDER AND UNDELIVERED Oct. 1 1988
Built new by carbuilders	6,821	5,605	6,117	4,487	15,694	16,107
Built new in RR shops	0	0	0	0	0	0
Built new—Total	6,821	5,605	6,117	4,487	15,694	16,107
Rebuilt	0	35	0	0	0	176
TOTAL	6,821	5,640	6,117	4,487	15,694	16,283
Locomotives (new and rebuilt)	N/A	N/A	N/A	N/A	N/A	N/A

Source: Transportation Div., AAR and American Railway Car Institute

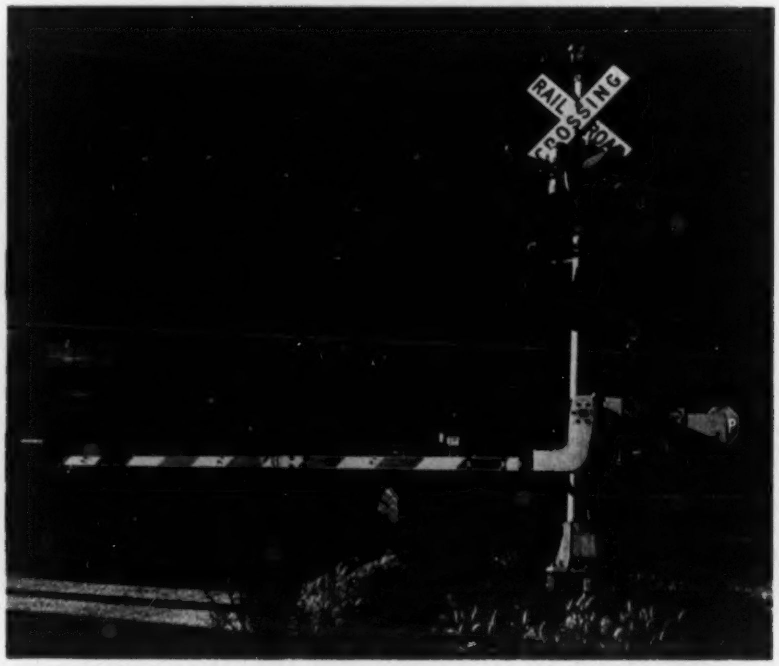
Crossing safety—Part II

Funding needs escalate

A DOT study says grade crossing needs will rise to $853 million a year, including $428 million to replace, improve, and maintain warning systems and surfaces. But who will pay?

By LUTHER S. MILLER, Editor

In 1974, 1,128 lives were lost in accidents at highway-railroad grade crossings. In 1988, despite a 37% increase in the exposure index, there were only 689 fatalities, a drop of around 40%. (The exposure index is derived from a formula involving total train miles and total vehicle miles traveled. During the 1974-1988 period, train miles decreased by 11%, but vehicle miles rose by 55%.)



DOT says $320 million a year needs to be spent to improve, replace, maintain and operate active warning systems like this one.
Edward Delvers

This dramatic improvement in crossing safety began at about the time the federal government started to invest heavily in grade crossing warning devices and surfaces through a special program—Section 130 (203)—which Congress created in 1973.

The Section 130 (203) money dedicated to crossing safety comes from the Highway Trust Fund. It has averaged around $170 million a year, about one-fourth of the total of $670 million that is invested annually in grade crossings. But it's an important fourth: It is this money that has paid for most of the warning systems and improved surfaces that the Federal Highway Administration estimates have saved nearly 5,000 lives and prevented 20,000 injuries since the program was enacted.

But the grade crossing safety battle is far from over. Although the long-term improvement is evident when viewed in the context of the steadily rising exposure index, actual fatalities have recently been going up again—from 507 in 1986, to 533 in 1987, and 689 in 1988.

It was the soaring fatality rate in the early '70s that prompted Congress to order the U.S. Department of Transportation to conduct a study of crossing safety needs. Out of that study came the report that led to the Section 130 (203) program.

Now the U.S. DOT has completed a new crossing safety report, also mandated by Congress. It says that total investment in crossings needs to rise over the next 15 years to an average of $853 million a year.

Railroad people involved in crossing safety welcome the report's conclusions, although some are disappointed that the study fails specifically to recommend a renewal of the Section 130 (203) funding, which they regard as the linchpin that holds the crossing safety program together. (See Crossing safety, Part I, *RA*, Oct., p. 47.)

- **The story so far.** In 1985-1987, the DOT study shows, an average of over $669.5 million was spent annually on public rail-highway crossings—$149.5 million for maintenance and operations (of which the railroads paid $133.1 million, even though both the courts and the ICC have held that crossing safety is a highway, not a rail, responsibility); $268.7 million for structures, mostly separation projects dictated more by highway needs than safety; $155.6 million for active warning devices (of which federal funds paid $106.7 million); and $90.5 million designated as "other," about three-fourths of which represents expenditures for crossing surfaces, which again were principally funded by the Section 130 (203) program.

The role of active warning devices in improving safety was underscored by the Federal Highway Administration in its 1989 Annual Report on Highway Safety Improvement Programs. Commenting on the reduced crossing accident rate that marked the 1974-1987 period, the FHWA report observed: "For new flashing lights, there was a 77% reduction in fatal plus injury accident rates. For new flashing lights and gates, the reduction was 86%; for new gates only, it was 80%."

The importance of smooth crossing surfaces is underscored in the DOT report, which notes that crossings create a discontinuity in the normal highway surface which "may create a hazardous situation for motorists."

Not surprisingly, both warning systems and improved surfaces continue to be high on the list of priorities which the DOT has established in recommending an increase in total crossing expenditures to $853 million a year through the year 2005.

- **DOT writes a new chapter.** In the DOT spending scenario, about $320 million a year would be earmarked for warning systems (including $185 million for improvements and replacements, $30 million for new systems to improve the safety record, and $105 million for operation and maintenance); $425 million for structures ($390 million for improvements and $35 million for operation and maintenance); and $108 million for such other needs as surfaces and realignment ($73 million for improvements, $35 million for operation and maintenance). Thus, the new study sees a need for $648 million a year for crossing improvements and $205 million to maintain and operate crossings.

The $185 million to replace and improve warning systems breaks down this way: "Using a reasonable schedule of at least 2,200 replacements each year," says the DOT report, "replacement of obsolete active warning devices by 2005 with standard devices will cost approximately $88 million a year." Another $26 million a year will be required to replace crossbucks and other passive warning devices, for a total of $114 million a year just to maintain minimum safety standards. Still another $71 million will be needed to incorporate state-of-the-art equipment when replacing the 2,200 older devices ($53 million) and to install modern train detection systems ($18 million). To further reduce accidents, by approximately 15-20% by the year 2005, could cost still another $30 million annually, a program "that would concentrate on improved warning systems."

As for crossing surfaces, DOT sees an annual need of around $73 million for improvements. It will cost $23 million for replacement-in-kind of deteriorated surfaces. If these are at the same time modernized, the additional cost will be $22 million. Relocation and closure alternatives could cost $18 million, with another $10 million going for realignment of surfaces required when rail and highway facilities are improved.

In the structures area, DOT says $390 million a year needs to be spent on improvements necessary to maintain adequate traffic services for both highways and railroads. Routine maintenance will cost $35 million a year, for a total of $425 million. The DOT study notes: "The current National Bridge Inventory identifies a total of 15,800 highway structures over a railroad only, and another 7,200 highway structures over a combination of features, including a railroad. Of the 15,800 structures, 6,900 are currently identified as structurally deficient or functionally obsolete."

The DOT study repeatedly stresses the key role of warning systems in improving crossing safety, although more money is invested in separations:

"Warning systems respond the most effectively to safety concerns, separation structures are more effective in maintaining and improving mobility. It could be said that 38% of the crossing needs are safety oriented, 50% are mobility oriented."

• **Safety first?** Separation structure improvements are funded by several federal-aid programs; but most of the safety related work is funded by Section 130 (203), and it is the fate of this program, whose current authorization expires in 1991, that has some railroad people worried. They are concerned not only about its renewal, but in what form it might be renewed. There is some fear, for example, that the current 90% federal-10% local match formula might be revised to require a higher local share (which could mean higher costs for railroads); or that states might be given even more discretionary authority than they now have over the expenditure of this "dedicated" money—in which case, railroaders believe, much of it would be dedicated to other than crossing safety needs.

The DOT study leaves the question of funding to be resolved by the architects of a new National Transportation Policy.

DOT has often said, in effect, that safety is its most important product. Time will tell. ■

Grade crossing outlays, past and projected

Expenditures at public rail-highway crossings

1985-87 Average
(Thousands of dollars)

Function	Source of Funding Federal	State/Local	Railroad	Total
Maintenance and Operations	—	16,400	133,100	149,500
Improvements at:				
Passive Crossings	3,900	1,200	100	5,200
Active Crossings	106,700	30,700	18,200	155,600
Structures	136,400	115,700	16,600	268,700
Other	50,700	20,000	19,800	90,500
Total	297,700	184,000	187,800	669,500

Source: U.S. DOT

Estimated annual needs for public rail-highway crossings through the year 2005

(Millions of dollars)

Category of Needs	Major Activity Area Warning Systems	Structures	Other	Total
Minimum Safety Standards and Replacement	114	80	23	217
Maintain Adequate Safety and Traffic Services	71	310	50	431
Subtotal, Improvement	185	390	73	648
Operation and Maintenance	105	35	35	175
Accident Reduction	30	—	—	30
Total	320	425	108	853

Source: U.S. DOT

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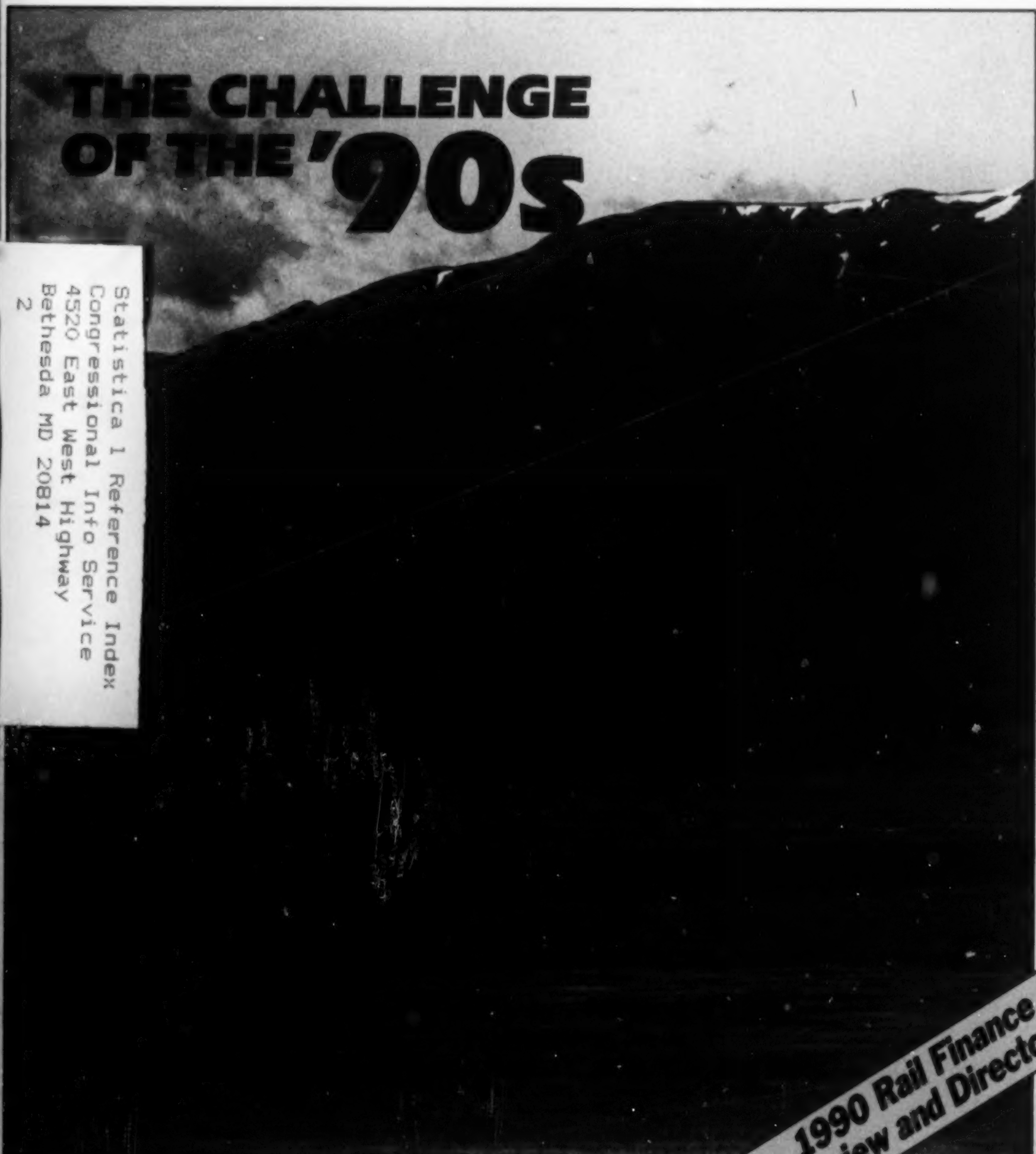

THE CHALLENGE OF THE '90s

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1990 Rail Finance Review and Directory

December 1989

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Features

THE CHALLENGE OF THE '90s

The challenge of the '80s was survival. The challenge of the '90s will be growth. Four industry leaders describe how they think railroads must respond to that challenge.

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Chairman, President and
Chief Executive Officer, Conrail

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President and Chief Operating Officer
Santa Fe Railway

A labor-management partnership .... p. 31
By Gerald Grinstein,
President and Chief Executive Officer
Burlington Northern, Inc.

Leveling the playing field .. p. 32
By Richard E. Briggs,
Executive Vice President
Association of American Railroads

1990 RAIL FINANCE REVIEW AND DIRECTORY

A special section, prepared by *Railway Age* Financial Editor Anthony D. Kruglinski, examines four main areas of railroad financing, and lists some of the major players in this multi-billion-dollar field. This section begins immediately following p. 34 in our regular pagination.

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39 Locomotive leasing, the right way

Despite the mixed reviews given to motive power leasing to date, a strong case can be made in favor of both short and long term equipment lease programs.

42 The Florida field narrows to one

The Florida High Speed Rail Corporation, a consortium led by ABB, is the sole remaining applicant for the franchise to build a Miami-Orlando-Tampa system.

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Cover: Denver & Rio Grande Western at Tennessee Pass, Colorado, by Gary J. Benson

Rail Finance cover by Edward Delvers

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INSIDE

The challenge of the truckers

LUTHER S. MILLER

"The challenge of the '90s" is the cover story in this end-of-year, end-of-decade issue of *Railway Age*. It takes the form of four articles written exclusively for *Railway Age* readers by four leading industry spokesmen—Conrail's James A. Hagen, Santa Fe's Michael R. Haverty, Burlington Northern's Gerald Grinstein, and the AAR's Richard E. Briggs. Mr. Hagen stresses the need for the kind of inter-road cooperation that will provide "what customers want—seamless transportation. One call, no hassle, get it there when I need it, at the right price. The way trucks do it." Mr. Haverty, examining the industry's technological needs, foresees a growing fleet of articulated cars and he also sees the day, not far off, when "each car will have a planned itinerary when it arrives at a railroad, detailed as to the train it will move on and its predicted arrival." Mr. Grinstein sees the forging of a true labor-management partnership as a *sine qua non* of growth—indeed, of survival—as railroads move toward the 21st Century, and he warns that on both sides conventional wisdom may have to go by the boards: "If we stick to the old patterns . . . the railroads will continue to earn less than the cost of capital . . . the unions will continue to lose membership . . . the public will be left with a smaller, weaker rail system." In the concluding article, Mr. Briggs describes what still needs to be done in Washington to level the transportation playing field, and it is here that the scenario begins to get a little scary, for in Washington railroads are confronting situations that are beyond their control.

The most serious of these by far is the continued subsidization of the rights-of-way used by the railroad's competitors, the truckers and the barges. "Not only should user charges recover all maintenance and new construction costs, but provisions should be made for recovering social costs as well," argues Mr. Briggs. "And there should be no increase in allowable truck lengths and weights, and no new capital construction on the waterways until such adequate user charges are developed."

It is, in fact, the specter of heavier, longer highway rigs that is casting the darkest shadow today over the railroad industry's prospects. Our deteriorated system of highways and bridges needs vast infusions of rehabilitation dollars, and if the truckers are asked to help pay a modest portion of the bill (they have never really paid their share), they are likely to ask for something in return. By some estimates, highway and bridge needs are in the $100-billion-a-year neighborhood. The American Road & Transportation Builders Association a few weeks ago endorsed an 18-cents-a-gallon increase in gasoline and diesel user fees to expand highway spending to about $40 billion a year.

What happens if the truckers win, in return, the right to put veritable "rubber-tired trains" on the highways? By one conservative estimate, increased highway size and weight limits could reduce railroad revenue ton-miles by nearly 10% and cut railroad operating income by more than 50%.

The Texas Research and Development Foundation is now completing a research project to assess the effects of heavier, longer trucks on pavement damage, safety, land use, and pollution. Another research effort, at M.I.T., is trying to measure the railroad revenue losses that would ensue.

Effectively getting this story across on Capitol Hill and at the White House may prove to be the biggest challenge of the new decade.

Railway Age
...for the new age of railways and rail transit

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Equipment

BC Transit: Awarded a $33 million (Canadian) contract to UTDC for 16 additional SkyTrain vehicles; the contract provides options for more cars. The new vehicles, which will bring the total SkyTrain fleet to 130, will be used on the three-kilometer Surrey extension, the final section of which is to open in March 1990. BC Transit is also planning two additional line extensions, one to Whalley, B.C., for completion in mid-1993, and another to Coquitlam, B.C., for completion in 1995.

Chicago Transit Authority: Morrison Knudsen is the apparent lower bidder, at $190 million, to supply 232 new cars to CTA, with options that would bring the total order to 374 cars. The cars are to be built at MK's shop at Hornell, N.Y.

Chrysler Rail Transportation Corp.: Purchased Xtra Corp.'s fleet of 4,200 rail cars and 75 locomotives. This brings the company's rail and intermodal fleet to more than 21,000 units. A year ago Chrysler Rail purchased 4,000 cars from TCA, a leasing affiliate of Thrall Manufacturing.

Conrail: Ordered 1,000 fully-enclosed multi-level cars, for transport of motor vehicles, for delivery in 1990. Thrall Car will build the racks at its plants in Cartersville and Winder, Ga. Conrail is acquiring 850 similar cars this year.

Trailer Train: Ordered 500 intermodal platforms from Trinity Industries for delivery beginning in first quarter 1990.

Revenue freight carloadings

Commodity	Nov. 11 week	Nov. 4 week	Oct. 28 week	Oct. 21 week
Grain	31,958	31,957	29,878	29,482
Other farm products	2,301	2,307	2,430	2,558
Metallic ores	17,902	19,863	19,131	20,246
Coal	135,960	134,673	133,570	127,006
Crushed stone, gravel and sand	16,880	17,130	18,586	18,737
Nonmetallic minerals	8,993	10,551	11,020	9,827
Grain mill products	9,773	10,285	10,044	10,594
Food and kindred products	9,302	9,575	9,083	9,152
Primary forest products	8,921	9,301	9,844	9,282
Lumber and wood products	6,033	6,406	6,362	6,355
Pulp, paper and allied products	9,715	10,289	10,443	9,621
Chemicals and allied products	26,833	27,105	27,185	26,855
Petroleum products	4,722	4,996	5.322	4,812
Stone, clay and glass products	10,353	10,707	10,960	11,049
Coke	5,873	5,291	5,776	5,740
Metals and products	8,944	9,714	9,305	8,817
Motor vehicles and equipment	19,100	19,283	19,713	18,494
Waste and scrap materials	8,598	8,514	8,644	8,805
All other carloads	6,303	7,023	7,066	7,139
Total Cars Loaded	**348,464**	**354,970**	**354,362**	**344,571**
% change from previous year	(.9)	(1.4)	(1.0)	(4.4)

		% change
Cumulative total: 45 weeks	15,075,937	(1.2)

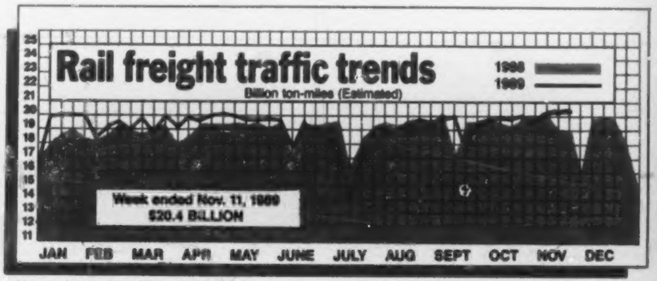
	Nov. 11	Nov. 4	Oct. 28	Oct. 21
Estimated revenue ton-miles (billions)	20.4	20.4	20.2	19.7
% change from previous year	.0	.0	.0	(3.0)

Total:	1989	1988	% change
45 weeks	865.8	867.7	(.2)

Intermodal traffic

	Nov. 11	Nov. 4	Oct. 28	Oct. 21
Trailers	72,178	74,633	74,867	71,925
Containers	51,985	53,276	53,171	53,451
Total	**124,163**	**127,909**	**128,038**	**125,376**
% change from previous year	4.5	4.1	2.6	5.4

		% change
Cumulative total: 45 weeks	5,167,885	3.0



Source: Association of American Railroads

Facilities

Illinois Central: Placed an order with Safetran Systems Corp. for a ctc office system. The computer based center controlling an 800-mile route from Chicago to New Orleans will be located in Chicago. Safetran says the modular concept of its new Autotrak Graphic Dispatching System made it possible to design a customized, cost-effective system for IC.

New York DOT: Retained the firm of Berger, Lehman Associates of Rye, N.Y., to provide design services for completion of the Oak Point Rail Link, a proposed 1.8-mile railroad trestle along the eastern shore of the Harlem River in New York City. The structure is part of the full freight access program for the east side of the Hudson River and will connect the Highbridge Railroad Yards with the Harlem River Yards. Construction is to begin in the spring of 1991.

New York State DOT: Selected Steinman Boynton Gronquist & Birdsall of New York to design the rehabilitation and partial replacement of the Williamsburg Bridge connecting Manhattan and Brooklyn. The bridge includes a two-track rapid transit line, and it will be necessary to construct temporary track structures along the bridge to support full service while the existing track structure is rehabilitated. Total cost of the project is $400 million.

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January 1990

Railway Age

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INVESTING FOR GROWTH

Class I capital budgets reflect optimism p. 24

Despite some troubling traffic trends, major railroads continue to budget for growth, not recession. Here's how eight of the Class I systems plan to invest more than $3.3 billion in 1990.

Regionals reveal 1990 improvement plans p. 28

Twenty-three of the largest regional and short line roads plan capital outlays this year of $146 million, up nearly 12% from '89 levels. Heaviest spending will be on track.

Passenger cars: A good market gets better p. 32

Cars valued at around $1 billion were either delivered to North American rail passenger agencies in 1989 or backlogged at yearend. Up to 868 more cars will be ordered this year.

40 Gil Carmichael charts an activist course

An unabashed advocate of the rail mode, freight and passenger, FRA's administrator hopes his views will be reflected in the new National Transportation Policy.

44 Waste: How big a market?

Rail movement of solid waste is now estimated at one million tons annually. Experts believe that given the right service/equipment package, it can rise to 25 million tons.

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INSIDE

What did (and didn't) happen in the '80s

LUTHER S. MILLER

The story of the Great Railroad Turnaround of the '80s has been told often; it's one that bears repeating in an industry that for so many years had little to cheer about. But it's important to remember exactly what was involved in that turnaround, and what wasn't.

What did not happen during the '80s was a great return of business to the railroads. Carloadings actually dropped, from 22.2 million in 1980 to 21.6 million in 1988 and a little less than that in 1989. Originated tonnage also declined, from 1.5 billion in 1980 to 1.4 billion in 1988. Revenue ton-miles did rise, from 919 billion in 1980 to close to one trillion in 1988 and very nearly that again in 1989, owing to larger cars and longer hauls. Nevertheless, rail traffic by any measure lagged the increase in industrial production during the decade; the railroad share of intercity tonnage dropped more than two percentage points, and the rail share of intercity ton-miles was down about half a point.

The financial side of railroading was a different story. Net income rose from a little over $1 billion to well over $2 billion, and cash flow more than doubled, from $2.4 billion to $5.2 billion—all during a time when revenue per ton-mile was actually dropping, in both current and constant dollars.

It was not new business but productivity that proved to be the passkey to profitability in the '80s. As AAR President William H. Dempsey recently reminded us, Class I roads following implementation of the Staggers Rail Act used their new freedoms to make unprecedented gains in productivity. Ton-miles per employee-hour increased 89%. Ton-miles per train-hour improved 45%. Average freight car trips per year rose from 15.8 to 21.5. Railroads were able to reduce the size of costly car and locomotive fleets and invest more capital dollars in track and technology.

Will '80s history repeat itself in the '90s? No way. In many areas railroads have now trimmed away most of the fat, and to cut further might get down to sinew and bone. This is particularly true of the rolling stock fleet; it's encouraging to be able to report that car and locomotive acquisitions are on the way up again (p. 24).

One area where there's still too much fat is the workforce. While employment dropped from 438,000 in 1980 to 235,900 in 1988, the cost of labor as a percentage of expenses dropped only slightly, from 49.1% to 46.5%. Improving that may be the second biggest challenge of the '90s.

The biggest challenge will be improving the other half of the operating ratio—revenues. As noted, new business hasn't been coming to the railroads, and in the end that's what really counts.

Two developments that could impact both sides of the operating ratio are reported in this issue; both involve the Santa Fe. In Lines on Labor (p. 22) Senior Editor Gus Welty describes a Santa Fe initiative that has jolted conventional wisdom right off the bargaining tables. A news story on p. 17 describes a traffic agreement between Santa Fe and a trucking company that has just as severely jolted conventional thinking on rail/truck relationships.

It's too early to say whether these bold initiatives will work. It is not too early to say that railroads must do *something* different if they intend to be more than also-rans in the '90s transportation race.

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Bi-State Development Agency: Siemens Energy & Automation is the apparent low bidder, at $45,435,261, to supply 31 articulated cars for the St. Louis light rail system. Other bidders were ABB Traction, Sumitomo, and C. Itoh.

Burlington Northern: Ordered 100 sets of locomotive-condition monitoring equipment from Rockwell International. The monitoring system, data system, and radio ground stations are second-generation production configurations from the Rockwell Advanced Railroad Electronics System (ARES) which has been under test on BN since 1986. The contract calls for installation of radio base stations, onboard monitoring systems and onboard data systems which will send locomotive-condition data to three of BN's major locomotive maintenance shops. Deliveries will begin early this year, with the system scheduled to become operational by fall (*RA*, Oct. 1989, p. 33).

New York City Transit Authority: Awarded a $100-million contract to Morrison-Knudsen for the remanufacture of 140 R-44 subway cars and for procurement of major components for 140 additional R-44 cars to be remanufactured by NYCTA. Work will be performed at MK's Hornell, N.Y., facility; deliveries will begin in July 1990 and are to be completed by January 1992.

- Awarded separate contracts to Bombardier of Canada and NIAC/Kawasaki of Japan to build "new technology" prototype train sets incorporating technologically advanced subsystems. Under a $19.5-million contract, Bombardier will supply nine 67-foot cars for IND/BMT lines. NIAC/Kawasaki's $19.85-million contract calls for 10 51-foot cars for the IRT line. The new cars are to start 14 months of in-service testing in July 1992.

Union Pacific: Will equip 1,400 locomotives with Loco-Temp solid state cooling system controllers supplied by Technical Service and Marketing, Inc. (TSM) of Kansas City, Mo. The installations will take place over a 28-month delivery period. The work will be done at UP's North Little Rock, Ark., and Salt Lake City facilities.

Facilities

Canadian National: Dynamic Sciences Limited has installed a $3-million (Canadian) upgrade of training simulators and computer software at CN's Transportation Training Centre at Gimli, Man.

NJ Transit: Awarded a contract to Edwards and Kelcey to design the conversion of the present two-track Northeast Corridor line to four tracks between Bergen and Portal interlockings, a distance of nearly two miles. The project, which will involve about $160 million worth of construction, is part of the planned Secaucus Transfer Station/Allied Junction development in Secaucus, N.J. It will permit the stopping of NJ Transit trains at the transfer station.

Norfolk Southern: Plans to construct a $100 million coal storage facility on 1,500 acres that it has optioned in Isle of Wight County, Va., subject to obtaining a requested rezoning of the property and necessary government permits.

Revenue freight carloadings

Commodity	Dec. 16 week	Dec. 9 week	Dec. 2 week	Nov. 25 week	Nov. 18 week
Grain	31,095	33,714	33,850	28,076	32,766
Other farm products	2,348	2,654	2,744	1,819	2,056
Metallic ores	20,198	18,522	20,244	18,323	18,920
Coal	125,099	135,684	131,328	105,741	136,058
Crushed stone, gravel and sand	10,725	13,844	14,135	9,879	15,903
Nonmetallic minerals	9,253	8,758	9,810	7,545	10,489
Grain mill products	10,259	10,220	10,528	8,980	10,137
Food and kindred products	9,268	9,260	9,586	7,234	9,282
Primary forest products	9,047	9,310	9,250	6,356	9,460
Lumber and wood products	6,103	6,018	6,925	4,788	6,243
Pulp, paper and allied products	10,068	9,737	11,064	9,505	9,567
Chemicals and allied products	26,282	27,765	29,821	22,178	27,309
Petroleum products	5,176	5,233	5,363	4,312	4,890
Stone, clay and glass products	8,508	9,711	10,343	8,142	10,286
Coke	5,577	5,492	6,149	4,744	5,410
Metals and products	8,488	8,552	9,646	7,408	8,883
Motor vehicles and equipment	18,829	19,756	19,616	13,112	18,497
Waste and scrap materials	8,827	8,462	8,477	5,756	8,608
All other carloads	6,223	6,086	6,043	4,747	7,179
Total Cars Loaded	**330,833**	**348,778**	**354,922**	**278,645**	**351,943**
% change from previous year	(3.5)	(2.8)	(.5)	(1.9)	(1.5)

		% change
Cumulative total: 50 weeks	16,740,948	(1.3)

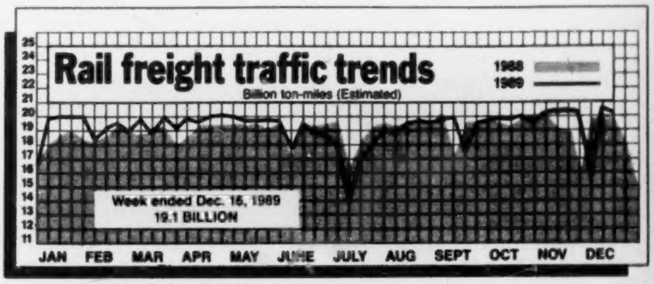
	Dec. 16	Dec. 9	Dec. 2	Nov. 25	Nov. 18
Estimated revenue ton-miles (billions)	19.1	20.3	20.7	15.9	20.2
% change from previous year	(3.5)	(1.0)	.5	(.6)	(.5)

Total:	1989	1988	% change
50 weeks	963.9	966.8	(.3)

Intermodal traffic

	Dec. 16	Dec. 9	Dec. 2	Nov. 25	Nov. 18
Trailers	71,953	73,866	72,339	52,964	71,277
Containers	53,506	50,011	50,465	40,263	52,748
Total	**125,459**	**123,877**	**122,804**	**93,227**	**124,025**
% change from previous year	8.8	3.5	4.9	(.1)	4.5

		% change
Cumulative total: 50 weeks	5,757,277	3.2



Source: Association of American Railroads

INVESTING FOR GROWTH

Capital budgets reflect optimism

A late '89 business slump underscored the need for continued emphasis on cost control, but most 1990 Class I capital budgets reflect long-term optimism for traffic growth.

By LUTHER S. MILLER, Editor

Capital improvement outlays*

(millions)

System	Projected 1990	Estimated 1989
Santa Fe	$305.0	$264.2
Burlington Northern	480.0+	480.0
Conrail	400.0	680.0
CSX Rail	542.0	510.0
Illinois Central	40.6	16.5
Norfolk Southern	683.0	695.9
Southern Pacific Co.	305.0	372.0
Union Pacific	585.0	708.0
Totals	**$3,340.6**	**$3,726.6**

* Does not include leased equipment. See text.

With traffic declining, and with all signs pointing to a continuing slump in such key commodities as motor vehicles and housing materials through at least the early months of 1990, the railroads late in 1989 were looking for new ways to control costs and to protect already thin profit margins.

But a *Railway Age* survey in December suggested that the late-1989 business downturn was not appreciably affecting railroad capital improvement budgets for 1990. Indeed, a number of railroads plan to increase their capital outlays this year, and those with lower budgets have reasons other than business levels for cutting back. Most railroads, in fact, seem optimistic that the present downturn will be short-lived, and they're continuing to budget not for recession but for growth.

Eight railroad systems representing 85.5% of all Class I mileage told *Railway Age* that they plan to invest $3.34 billion in capital projects in 1990. These same railroads estimate that they spent $3.73 billion on improvements in 1989. But the 1990 decline may be more apparent than real. In some cases—Conrail and Union Pacific, for example—1990 outlays will be lower only because 1989's were unusually high. In other cases, capital budgets are lower because more and more equipment is being acquired through lease. On most roads, budgets for track and structures, which are not affected by leasing, are being increased. When leases are factored in, the rolling stock market also shows strength.

Deliveries of both freight cars and locomotives rose sharply in 1989, and 1990 is shaping up as an equally strong year. Fourth quarter 1989 totals won't be available until February. But in last year's first nine months, 21,945 new cars were delivered compared with 14,765 in the corresponding 1988 period. Orders for new cars in last year's first three quarters totaled 22,806, up from 20,928 in the 1988 period. On Oct. 1, 1989, builders had a backlog of 15,694 cars, compared with 16,283 on Oct. 1, 1988. These levels of business were consistent with earlier forecasts that 28,000 to 30,000 new cars would be delivered last year, with orders gradually rising in ensuing years to the 35,000-40,000 car level.

One major carbuilder expects 30,000 to 32,000 new cars to be delivered in 1990.

As for locomotives, 550 new and rebuilt units were delivered in last year's first nine months, more than double the 264 units placed in service during the same 1988 period. The locomotive backlog on Oct. 1 was 74, compared with 73 one year earlier.

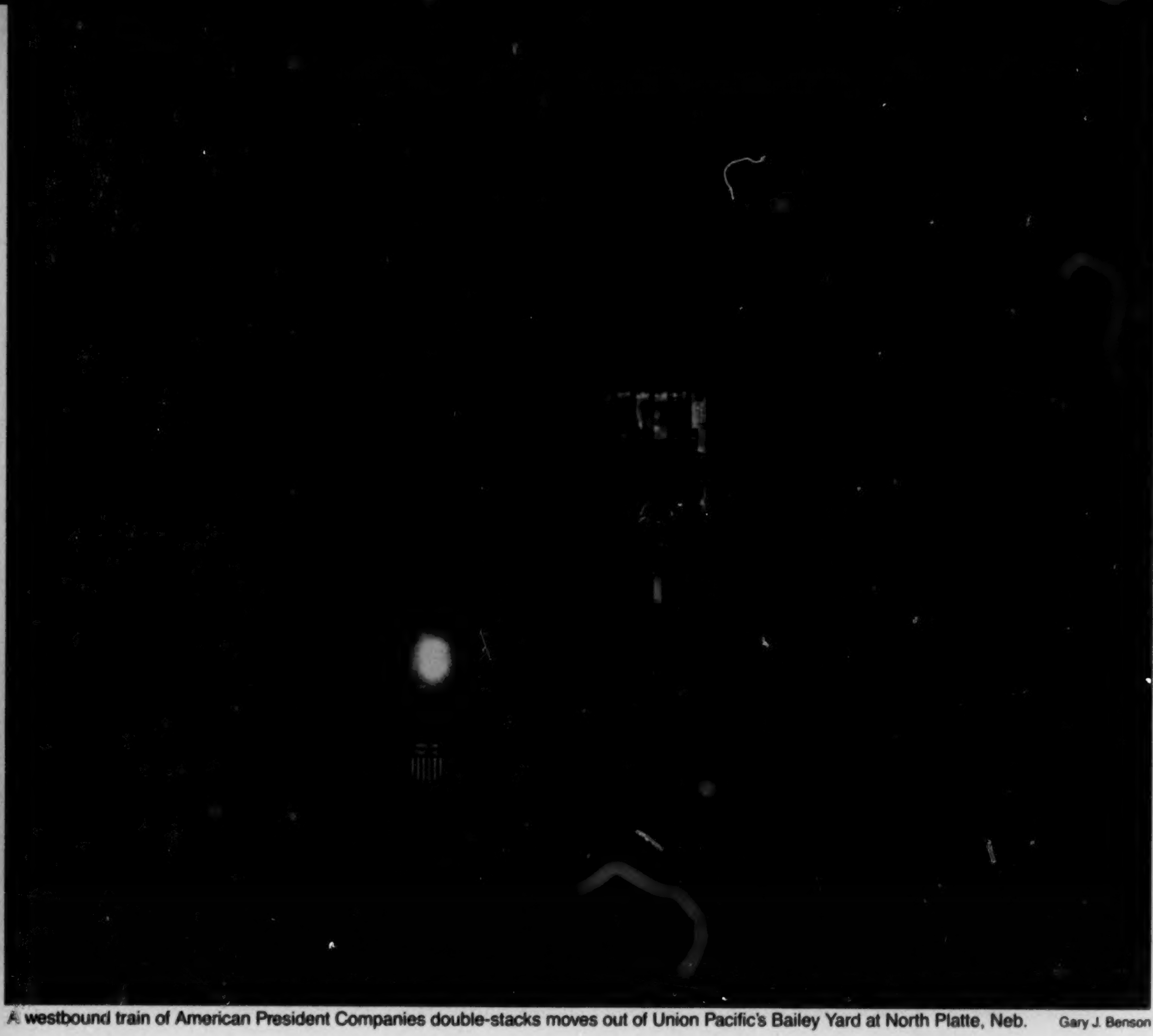
In actual numbers locomotive ownership dropped last year, to 19,767 units on Oct. 1, compared with 19,984 on Oct. 1, 1988. But cumulative horsepower rose to 50,447,110 last year from 50,388,800 in 1988.

As noted, many new freight cars—and increasingly, many new locomotives—do not appear in railroad capital improvement budgets, because they are acquired through various types of leases. Also not reflected in railroad capital programs are the large numbers of cars acquired by shippers and by such non-railroad fleet owners as Trailer Train. For example, Trailer Train last year invested a record $285 million in new equipment; and in October, the TT board approved a $149 million advance on a 1990 program to cover the purchase of 1,500 double-stack wells and 2,800 platforms for articulated intermodal cars.

"Over the next five years," said TT President Raymond C. Burton, "our new car purchases may well approach $1 billion as we endeavor to size our fleet for growth and modernization, while at the same time we continue to retire older cars no longer suitable for the larger trailer and container sizes that the rail industry must handle."

Following is a road-by-road survey of capital improvement programs as reported to *Railway Age* in December:

—Atchison, Topeka & Santa Fe: Santa Fe plans to invest $305.0 million in capital improvements in 1990, up from an estimated $264.2 million in 1989. M/w outlays will rise to $119.775 million this year from $96.6 million in 1989. C&S expenditures will total around $19.0 million, compared with $7.5 million last year. No direct outlays are planned for freight cars, although Santa Fe will be acquiring double-stack and articulated intermodal cars through lease arrangements. Santa Fe does plan to spend $4.5 million on car rebuilds this year, up from $3.0 million in 1989. Santa Fe will increase its budget for new locomotives, to $57.5 million this year (40 units) from $50.88 million in 1989. ATSF will also



A westbound train of American President Companies double-stacks moves out of Union Pacific's Bailey Yard at North Platte, Neb. Gary J. Benson

acquire 60 GE locomotives on a power-by-the-mile lease. The railroad also plans to rebuild 40 locomotives this year at an estimated cost of $16.0 million; no rebuilds were on last year's budget. Santa Fe plans to invest a total of $88.2 million on other capital projects, compared with $106.2 million last year. The "other" category this year will include $33.0 million for motor vehicle loading/unloading facilities and TOFC facility improvements. In the track area, Santa Fe this year will relay 165 miles of rail, insert one million new ties, rebuild 128 bridges, and resurface approximately 3,100 miles of track.

—Burlington Northern. BN plans capital spending this year at slightly above last year's level, which was approximately $480 million. The railroad was not able in December to supply a breakdown but did say that it planned to add 50 high-horsepower locomotives to its fleet this year. BN will also maintain its medium horsepower locomotive remanufacture program. The main emphasis in car acquisitions will be on multi-levels and coal hoppers. BN's major track outlay will be for installation of 700,000 concrete ties. BN acknowledged that its capital expenditures "are low by industry and historical standards." This is made possible, said BN, by "innovative track maintenance processes and improved equipment utilization."

—Conrail. CR's 1990 capital budget will be around $400 million, compared with actual expenditures in 1989 estimated at $680 million, but the apparent sharp decline is more an accident of the calendar than anything else. "The 1989 program," said a Conrail spokesman, "was about $170 million more than planned, because Conrail was able to take advantage of several short term, high rate of return opportunities that developed during the year." Leading 1989 expenditures was $278 million for track rehabilitation, followed by $230 million on rolling stock and transportation equipment, and $172 million on such other items as C&S projects, bridges and tunnels, computers, and telecommunications.

Conrail said its 1990 program "targets projects which further reduce costs, have the potential to increase revenue, and provide a higher rate of return. Among the specific projects planned are the continuing modernization of intermodal and automotive terminals, the acquisition of new transportation equipment, including new locomotives and automotive racks, increased clearances on key routes, and a normal program of tie and rail replacement."

—CSX Rail Transport. CSX, which spent $510 million on capital projects in 1989, plans to increase its budget this year to $542 million. CSX plans to spend $52 million on freight car rebuilds, compared with $65 million in 1989; $212 million on m/w, compared with $214 million last year; $30 million on C&S, up slightly from last year's $29 million; and $248 million on other projects, up from $202 million in 1989. In addition to these direct capital outlays, CSX will acquire equipment valued at $156 million through leases—new freight

Intermodal continues to be the growth area of railroading, and most 1990 capital improvement budgets contain substantial sums for improved terminal facilities. On Dec. 1, 1989, Burlington Northern moved its one-millionth shipment of the year. The millionth load was a container shipped by Carolina Freight from Chicago, part of the BN America Domestic Container Program.

cars, $33 million; rebuilt cars, $81 million; and rebuilt locomotives, $42 million. Last year, in addition to $510 million in capital expenditures, CSX acquired another $510 million of leased equipment—freight cars, $177 million; rebuilt cars, $186 million; new locomotives, $129 million; and rebuilt locomotives, $18 million.

CSX offered these comments on its 1990 programs: There will be continued emphasis on SD-40-2 locomotive rebuilding and on the slug program; new cars will be mostly auto racks; the car repair program will be led by open-top hoppers, covered hoppers, boxcars, gondolas, and woodchip cars; centralized dispatching will be expanded system wide and work will continue on an ATCS (Advanced Train Control System); there will be heavy emphasis on marketing projects, including a number of auto ramp construction/expansion projects (Atlanta, Smyrna, Tenn.; Tampa, Fla.; Jessup, Md. near Baltimore; and New Boston near Detroit); and continued investment in BIDS (Bulk Intermodal Distribution Services) terminals.

—Illinois Central. Owing primarily to a 480-mile ctc, single-track project between Chicago and New Orleans, IC will substantially increase its capital program, to $40.649 million this year from $16.498 million in 1989. M/w expenditures in 1990 will amount to $30.532 million, up from $13.244 million in 1989; C&S spending will rise to $10.117 million from $2.167 million. IC said the Chicago-New Orleans project accounts for 95% of the 1990 signal capital program and for most of the increased budget for m/w materials.

—Norfolk Southern. NS's 1990 capital budget, $683.0 million, is just slightly under the $695.9 million budgeted for 1989. NS this year has budgeted $71.3 million for new freight cars (primarily 1,000 new open top hoppers), compared with $72.3 million in 1989; and $56.8 million for car rebuilds (including 2,500 open top hoppers), compared with $62.7 million in 1989. NS plans to spend $73.6 million on 54 new locomotives in 1990, compared with $75.3 million in 1989. M/w outlays in 1990 are estimated at $271.2 million, up from $253.9 million in 1989; and C&S outlays at $21.4 million, down slightly from last year's $25.1 million. For other capital projects, NS has earmarked $188.7 million in 1990, compared with $206.6 million in 1989.

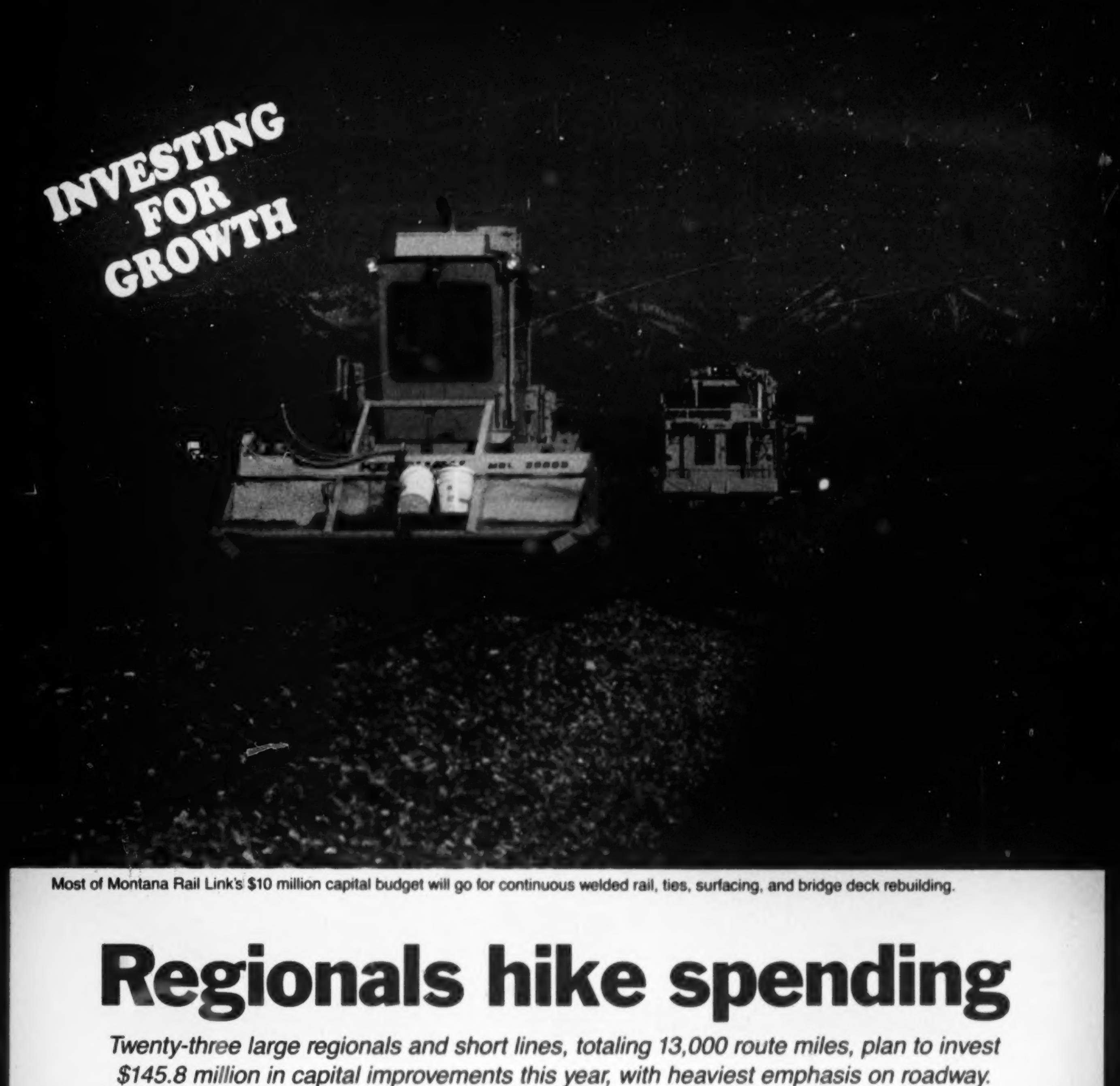
—Southern Pacific. SP has budgeted $305 million for capital improvements in 1990, plus $153 million in lease acquisitions. Last year SP's $372 million capital program was augmented by $26 million in leased equipment. SP will acquire 50 new locomotives this year; it also acquired 50 in 1989. A major rolling stock program in 1990 calls for acquisition of 400 100-ton open top hoppers, 350 100-ton covered hoppers for cement haulage, 160 double-stack container cars, 160 52-foot covered coil steel gondola cars, 150 65-foot plain gondolas, 100 100-ton 60-foot newsprint cars, and 50 open coil gondolas. SP will also acquire 13 ramp tractors this year. This compares with 1989 acquisitions of 80 double-stack cars and 38 ramp tractors.

Major fixed-plant outlays in 1990 will include $211 million for rails, ties and ballast; $22 million for computer technology upgrade; and $23 million for expansion of the Intermodal Container Transfer Facility at Long Beach. A total of $28.0 million has been earmarked for rails, ties, and ballast for Denver & Rio Grande Western.

—Union Pacific. UP anticipates capital outlays totaling $585.0 million in 1990, down from an estimated $708.0 million in 1989. UP will spend $10.7 million for new cars, including 316 auto racks, down from last year's $22.7 million program, which included 755 auto racks. UP plans to acquire 50 new locomotives this year for $77.5 million; last year UP invested $196.5 million in 152 new diesel-electric units. M/w spending will rise to $261.8 million this year from 1989's $254.0 million; C&S expenditures will rise to $32.3 million this year, compared with $19.9 million in 1989; and other projects, mainly roadway, will cost $206.0 million this year, up from $193.5 million in 1989.

UP said this year's outlays will include $15 million to install the work order function of ATCS on through and local freight trains; $12.5 million for capacity improvements on the Marysville Subdivision between North Platte and Kansas City; and $10.1 million for construction of an intermodal facility in Laredo, Tex.

—In Canada. North of the border the picture is much the same. Although both Canadian National and Canadian Pacific experienced disappointing traffic levels in 1989, and expect only slight improvement in 1990, they are planning no cutbacks in capital outlays. CN, which invested around $340 million (Canadian) in 1989, says it plans to maintain approximately the same level of spending in 1990. About 45% of CN's spending will be for roadway. Continued work on ATCS is also budgeted. CP also plans to maintain 1990 spending at 1989 levels though it was unable late in December to provide a dollar estimate. ■



Most of Montana Rail Link's $10 million capital budget will go for continuous welded rail, ties, surfacing, and bridge deck rebuilding.

Regionals hike spending

Twenty-three large regionals and short lines, totaling 13,000 route miles, plan to invest $145.8 million in capital improvements this year, with heaviest emphasis on roadway.

By FRANK MALONE,
Contributing Editor

In some ways, last year could have been much better for the regional railroad movement in general. Because the Supreme Court failed to clearly resolve the issue of labor protection for employees of lines to be spun off by major carriers, no significant new spinoffs took place. And, because Congress failed to provide federal loan guarantees for track rehabilitation, new equipment, and debt refinancing, some recent spinoffs continue to invest less than needed.

In other ways, it wasn't a bad year at all, as most regionals not only performed well but continued to make impressive capital improvements. This year, capital spending generally will be even higher, according to the plans (as of Dec. 26, 1989) of 23 of the 28 largest regional and short line carriers.

Improvement already seems to be paying off. A 1989 bright spot was a report by the ICC's transportation analysis office that 493 shippers using new short line and regional railroads "overwhelmingly" considered their service as good as or better than that provided previously by larger carriers.

The report included 14 regionals, defined as operating at least 350 miles, and 163 short lines. *Railway Age*'s 1990 capital spending survey includes 16 regionals according to the ICC definition, ranging from the 2,002-mile Wisconsin Central to the 350-mile Providence & Worcester, and 7 of the largest short lines, ranging from the 309-mile Paducah & Louisville (*RA*, Nov., p. 40) to the 208-mile Fox River Valley. The mileage figures are for total *route* operated rather than *track* owned, and include trackage rights. This survey includes older regionals and the regionals and short lines resulting from recent spinoffs by Class I carriers.

For 1990, these railroads plan to make capital improvements valued at more than $145.8 million, compared with about

$129.7 million in 1989, an increase of about 12%. Again this year, the lion's share will go into roadway. More than one million new crossties will be installed, of which 235,000 are set for the MidSouth system alone.

Ten carriers expect to invest more this year, including three of the four largest, all recent spinoffs, whose combined spending will total about $56.8 million. Chicago Central sees the largest increase, 193%, and the largest capital budget of all, including a major car acquisition. "We're encouraged that business conditions let us put that kind of money back into the railroad," says Lyle D. Reed, president and chief operating officer.

Also this year, MidSouth's capital investment will be up about 46% and Wisconsin Central's will be about 40% higher.

Seeing the largest decrease, 41%, is Montana Rail Link, the seventh largest new regional, but that decrease reflects reduced need. "We did quite a lot of catch-up work the first two years, and now we're in more of a normal cycle," says William H. Brodsky, president.

Also looking at a large decrease, 16%, is the third largest new regional, Dakota, Minnesota & Eastern. Struggling with a heavy debt load, the carrier had hoped to take advantage of federal loan guarantees this year, to free up at least $2 million for capital improvements.

Other carriers seeing less investment cite 1989 equipment acquisition that isn't being repeated, or completion of major track rehabilitation projects.

Among regionals and major short lines for which no 1990 spending plans are available is the Chicago, Misouri & Western, whose Chicago-St. Louis line was sold to Southern Pacific and whose St. Louis-Kansas City route was to be sold by year's end. The 430-mile New York, Susquehanna & Western was still planning its 1990 budget at press time (1989 capital spending was a projected $9.1 million).

Two Michigan carriers, the 380-mile Detroit & Mackinac and the 200-mile Central Michigan, did not expect to complete capital planning until early 1990, while a third, Escanaba & Lake Superior, declined to reveal figures because it is privately held, as did the 420-mile Kyle Railroad (most other regionals and short lines are not publicly owned).

—Wisconsin Central. In most cases, however, regional and short line presidents were not only willing but eager to discuss their plans for 1990, starting with Edward A. Burkhardt, Wisconsin Central president, who sees his railroad as strong enough financially to acquire more track when the opportunity presents itself. "We could finance a large transaction," he says.

That's not expected to happen this year, however, as the 2,002-mile operator of mostly ex-Soo Line track sees capital spending of $14 million, up $4 million from the 1989 total.

WC's 1990 program includes installation of 99,000 new and 34,000 used crossties, 157,000 tons of ballast, five miles of cwr, extensive rail and switch grinding, and heavy repair of 352 cars.

—MidSouth. Operating 1,150 miles of mostly ex-Illinois Central Gulf track in Mississippi, Louisiana, and Alabama, the MidSouth system sees 1990 capital spending of more than $19 million, compared with $13 million last year. Of that, $12 million will go for the first year of a five-year, $37-million rehabilitation of the 713-mile SouthRail segment, and the rest will go into the 418-mile MidSouth segment. No capital improvement is set for the MidLouisiana segment.

SouthRail will receive 185,000 new ties and 900 cars of ballast, along with rehabilitation of four yards. MidSouth will receive 50,000 new ties, 700 cars of ballast, and the first phase of a 73-mile cwr project.

—Springfield Terminal. Including its 346-mile Maine Central and 653-mile Boston & Maine segments, Springfield Terminal Railway Co., a Guilford Transportation Industries subsidiary, sees 1990 capital spending totaling $23 million, the same as for last year, but with a shift to locomotive overhauls. The 1989 plan included installation of 100,000 new crossties and other track work resulting in removal of more than 100 miles of slow orders.

—Dakota, Minnesota & Eastern. Operating 965 miles of former Chicago & North Western track through southern Minnesota and central South Dakota, Dakota, Minnesota & Eastern sees 1990 capital outlays of $7.5 million, compared with $9 million in 1989. This year's plan includes 80,000 new ties, 100,000 tons of ballast, strengthening of 13 steel bridges at west end to handle new betonite clay traffic from northeastern Wyoming, and acquisition of nine used locomotives.

—Chicago, Central & Pacific. Operating 797 miles of mostly ex-ICG track between Chicago and Omaha, Chicago, Central & Pacific expects 1990 capital spending to total $23.8 million, compared with about $8 million last year. The railroad will complete rehabilitation of a 100-mile segment in western Iowa (phase III of a project started in 1988) and realign track and yard at Dubuque, Iowa because of a highway project. These and general capital projects will involve 95,000 new crossties. What's more, CCP will acquire 220 new coal cars, with a supplier to be chosen in early 1990.

—Red River Valley & Western. Red River Valley & Western, operating 667 miles of ex-BN track in North Dakota and northern Minnesota, sees 1990 capital spending at "just over $1 million," about the same as for 1989. The plan includes 9,000 new ties, up to six miles of used rail, 50 to 60 miles of surfacing, and some m/w equipment.

—Iowa Interstate. Operating 662 miles of ex-Rock Island track between Chicago and Omaha, Iowa Interstate sees 1990 capital outlays totaling $1.5 million, compared with about $2.0 million last year, which included sizable equipment spending. This year's plan includes completion of a Chicago intermodal yard and 25 miles of track improvement at the railroad's west end involving 32,782 new crossties and 2,811 tons of ballast. With completion of the 1990 work, the entire main line will have been restored to 40 mph operation.

—Montana Rail Link. Operating 650 miles of ex-BN track in Montana, Idaho, and Washington, Montana Rail Link sees 1990 capital outlays of $10 million, compared with $17 million last year. This year's plan includes eight miles of new and 10 miles of used 132 pound cwr, 60,000 new ties, 220 miles of surfacing, and a large amount of bridge deck rebuilding.

—Tuscola & Saginaw Bay. As Michigan's designated operator of 550 miles of track with various previous owners, Tuscola & Saginaw Bay looks forward to capital investment of at least $4.4 million, with more likely to be announced, in a continuation of the strong pace of track rehabilitation started in 1988.

—Alaska Railroad. The 530-mile Alaska Railroad sees 1990 capital spending of $11.9 million, compared with $11.8 million last year. This year's program includes $4.5 million for maintenance of way.

—Indiana Hi-Rail. With 441 route miles, mostly ex-Norfolk Southern, Indiana Hi-Rail sees 1990 capital improvements totaling $3.1 million, compared with $2.6 million last year. The 1990 plan includes 30,000 new crossties. The railroad expects to acquire at least 60 more miles of route this year.

—Bangor & Aroostook. Operating 436 miles in Maine, Bangor & Aroostook will invest $2.9 million in capital improvements

Regional and short line capital outlays

	Miles of route	1990 capital	1989 capital
1. Wisconsin Central	2,002	$14.0	$10.0
2. MidSouth (MidSouth, MidLouisiana, SouthRail)	1,150	$19.0	$13.0
3. Springfield Terminal (Boston & Maine, Maine Cen.)	999	$23.0	$23.0
4. Dakota, Minnesota & Eastern	965	$7.5	$9.0
5. Chicago Central & Pacific	797	$23.8	$8.0
6. Red River Valley & Western	667	$1.0	$1.0
7. Iowa Interstate	662	$1.5	$2.0
8. Montana Rail Link	650	$10.0	$17.0
9. Tuscola & Saginaw Bay	550	$4.4+	$5.0
10. Alaska Railroad	530	$11.9	$11.8
11. Indiana Hi-Rail	441	$3.1	$2.6
12. Bangor & Aroostook	436	$2.9	$4.5
13. Washington Central	400	$1.5*	$2.0
14. Wisconsin & Calumet	380	$1.9	$1.5
15. Baltimore & Pittsburgh	369	$1.6	$1.8
16. Providence & Worcester	350	$4.4	$2.8
17. Paducah & Louisville	309	$4.6	$5.7
18. Farmrail	275	$0.4	$0.4
19. Green Bay & Western	254	$0.9	0
20. Indiana Rail Road	250	$1.5	$1.0
21. Columbus & Greenville	230	$1.2	$2.0
22. Kiamichi Railroad	230	$1.7	$1.6
23. Fox River Valley	208	$4.0	$4.0
	13,104	$145.8	$129.7

Not available: New York, Susquehanna & Western, 430 miles; Kyle Railroad, 420 miles; Detroit & Mackinac, 380; Escanaba & Lake Superior, 318; Central Michigan, 200.

*Includes capital *and* maintenance.

this year, compared with $4.5 million in 1989, which included a sizable equipment addition. This year's plan includes 26,000 new ties, compared with 12,000 last year, 22,500 tons of ballast, and significant rail replacement.

—Washington Central. With 400 miles of ex-Burlington Northern route, Washington Central will spend about $1.5 million this year, capital and maintenance combined, virtually all for roadway. WC's 1989 spending totaled about $2 million.

—Wisconsin & Calumet. Operating 380 miles of mostly ex-Milwaukee Road route across southern Wisconsin and into Illinois, Wisconsin & Calumet sees a 1990 capital budget of $1.9 million, all for roadway improvement, compared with a 1989 total of $1.5 million. This year's plan, aided by state funds, includes more than 35,000 new crossties for a west end project and an undetermined number for a southeast end project.

—Baltimore & Pittsburgh. Operating 369 miles of ex-CSX Transportation track, the 369-mile Baltimore & Pittsburgh plans capital projects worth $1.6 million this year, all for roadway, compared with $1.8 million in 1989. The 1990 work includes 20,000 new ties and 40,000 tons of ballast. Last year's investment focused on locomotives.

—Providence & Worcester. The 350-mile Providence & Worcester plans 1990 capital spending totaling $4.4 million, compared with $2.8 million last year. Planned is relocation of corporate headquarters to Worcester, Mass., from Woonsocket, R.I.; rehabilitation of a four-mile Port of Providence branch; a new one-mile runaround track for double stacks; and two locomotive rebuilds.

—Paducah & Louisville. Operating 309 miles of ex-ICG track, Paducah & Louisville sees 1990 capital spending of $4.6 million, compared with $5.7 million last year, which included car acquisition. This year, P&L will invest $3.4 million in track, including 6 miles of relay rail, 58,000 new ties, 31,000 tons of ballast.

—Farmrail System, Inc. Operating 275 miles of former BN track mainly in Oklahoma, Farmrail System sees 1990 capital spending of $400,000, the same as in 1989. This year's plan includes up to 12,000 new crossties, increased lining and surfacing, increased bridge work, a new locomotive servicing facility, and an improved radio system.

—Green Bay & Western. Running across central Wisconsin, the 254-mile Green Bay & Western sees 1990 capital outlays of about $900,000. A sizable increase over the 1989 level, it's largely related to the start of a major bridge rehabilitation that will take up to four years.

—Indiana Rail Road. Operating 250 miles of largely ex-ICG track in central Indiana and Illinois, Indiana Rail Road will invest about $1.5 in 1990 capital projects, for a good gain over last year. Planned is installation of 20,000 new ties, and about 20,000 tons of ballast, along with about five miles of rail replacement and bridge timber replacement. Outlays will increase if the railroad decides to acquire coal and grain cars.

—Columbus & Greenville. Operating 230 miles across central Mississippi, Columbus & Greenville sees 1990 capital spending totaling $1.2 million, compared with $2.0 million last year. This year's program includes 26,000 new ties, 50 miles of surfacing with 20,000 tons of ballast, and about 70 miles of rail anchoring, after completion last year of a $2 million rehabilitation of the Moorhead-West Point segment involving 38,000 new ties and 100 miles of surfacing with 95,000 tons of ballast.

—Kiamichi Railroad. Operating 230 miles of ex-BN track in Arkansas, Texas, and Oklahoma, the Kiamichi Railroad sees this year's capital spending totaling $1.5 million to $1.75 million, compared with $1.6 million last year. The plan includes 30,000 new ties, and acquisition of seven used locomotives, two slugs, and probably some used cars.

—Fox River Valley. Operating 208 miles of former C&NW route in eastern Wisconsin, Fox River Valley sees 1990 capital outlays of $4 million, about the same as for 1989, the first full year of operation. The 1990 plan includes 50,000 new ties and 50 miles of surfacing.

As revealed in this survey, the plans of regionals and major short lines reflect a widespread recognition of infrastructure's importance to survival. Another key, however, is ability to handle debt, which in some cases remains questionable. Seeing regionals as generally in good shape, the president of one says: "Those that were operational disasters have basically been culled out. You have another set of railroads that operationally are okay but they're carrying so much debt that they're still going to have problems and are going to be quite unhealthy.

"They may be proclaimed as failures, and in a way they are from the standpoint of people who put up the money because they're going to lose a lot of it. But these carriers can remain operating railroads, and with a lower level of debt they could be considered successes. The next buyers will come along and have a good deal." ■

Amtrak
INVESTING FOR GROWTH

Bombardier last year delivered 98 intercity cars like this one to Amtrak; six more are to come this year. By the mid-'90s Amtrak hopes to place orders for nearly 500 new-generation cars for use on busy eastern lines.

Bombardier

Passenger railcars: Good times get better

Cars delivered last year to passenger-train operators, plus the end-of-year backlog, represented a market of around $1 billion. More growth is in prospect during the 1990s.

If activity in the railcar market is a reliable barometer, the transit business climate at the beginning of 1990 can be described as generally sunny, with even better weather ahead.

Carbuilders last year supplied North American passenger rail operators with 547 cars of all types, and they entered 1990 with a backlog of 554 cars on order and undelivered—altogether, around $1 billion worth of business, according to *Railway Age*'s annual survey.

The operating agencies told *Railway Age* that they plan to place orders during 1990 for an additional 789 to 868 cars; and they foresee orders for up to 2,800 more cars during the following five years, 1991-1995.

• All this and more. Those figures are probably conservative. Not included in the long range outlook, for example, are the cars Dallas Area Rapid Transit (DART) will need for the 66 miles of light rail and 34 miles of commuter rail now planned; or the commuter cars Seattle will need if plans mature for a 32-mile line linking downtown Seattle with Puyallup; and the equipment that will be needed by numerous other light rail and commuter projects in various planning stages.

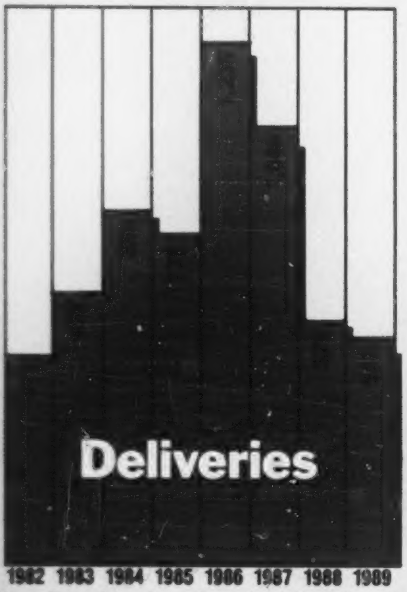
A brisk rebuild market further brightens the picture. The New York City Transit Authority late in 1989 awarded a $100-million contract to Morrison-Knudsen for the remanufacture of 140 subway cars and the procurement of components for rebuilding another 140 cars. This is part of a massive, multi-year rebuilding program involving 2,000 New York cars and budgeted at nearly $2 billion. Now in its final stages, the program calls for a total of 652 rebuilds in 1990 and 534 in 1991. NJ Transit will spend $178.5 million to overhaul 230 Arrow III commuter cars and convert them to a.c. propulsion; an initial contract has been awarded to ABB Traction. Chicago Transit Authority has contracted with New York Rail Car Corp. to rebuild 132 cars at a cost of $32 million.

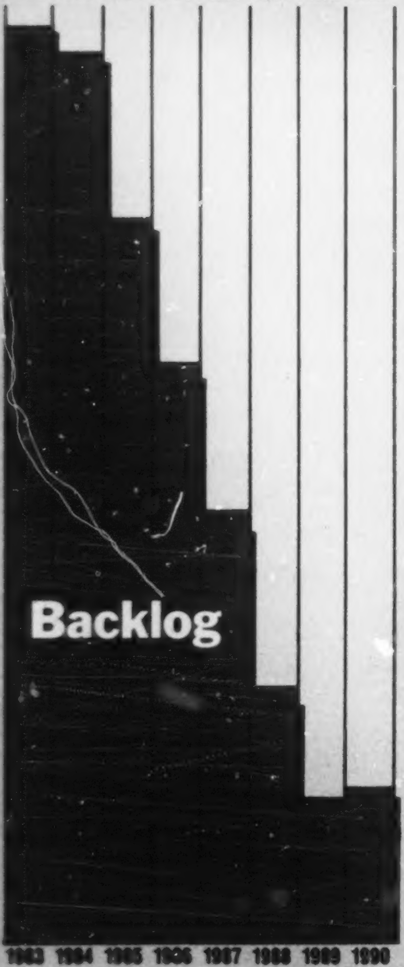
Rebuilding can lead to bigger things, as Morrison-Knudsen recently demonstrated. Late last year M-K was ready to set up shop as a new-car builder, having emerged as the apparent low bidder, at $190 million, on an order for 232 new Chicago Transit Authority cars.

When orders for APMs (automated people movers) are added in, the market looks better still. The major players in this increasingly busy field are UTDC, which built Vancouver's SkyTrain system and has now been awarded a contract to expand it; Matra of France, which has built an APM in Jacksonville, Fla., and is building a bigger one at Chicago's O'Hare International Airport; and AEG Westinghouse Transportation Systems, whose latest big contract is for a people mover system serving the various terminals at New York's JFK International Airport. AEG Westinghouse also built Miami's successful downtown people mover and will soon expand it.

• New-tech cars for New York. Any way you look at it, the passenger railcar picture is a bright one—brighter, in fact, than a cursory glance at the charts accompanying our "Market at a Glance" tabulation might indicate. These charts show a falling off of business in recent years, but

Passenger-car market at a glance





These cars were delivered in 1989:

Purchaser	No. of cars	Type	Builder
Amtrak	98	Intercity	Bombardier
Boston (MBTA)	56	Commuter	Bombardier
	6	Rapid transit	UTDC, Inc.
Los Angeles (LACTC)	26	Light rail	Nippon-Sharyo
Montreal	24	Commuter	Bombardier
New Orleans (RTA)	1	Light rail	MMTB
New York (NYCTA)	110	Rapid transit	Nissho Iwai American Corp.
San Diego (MTDB)	25	Light rail	Siemens-Duewag
San Francisco (BART)	91	Rapid transit	Soferval
Toronto (GO Transit)	18	Commuter	UTDC, Inc.
	(est.) 44	Commuter	UTDC, Inc.
Toronto (TTC)	34	Rapid transit	UTDC, Inc.
	14	Light rail	UTDC, Inc.
Total	**547**		

Plus: Amtrak—10 mail/baggage cars (Thrall)

Work goes forward on this undelivered backlog:

Purchaser	No. of cars	Type	Builder
Amtrak	6	Intercity	Bombardier
Baltimore (MTA)	35	Light rail	ABB Traction
Boston (MBTA)	75	Commuter	Kawasaki Rail
	51	Commuter	Bombardier
Los Angeles (LACTC)	28	Light rail	Nippon-Sharyo
Los Angeles (SCRTD)	30	Rapid transit	Breda
NJ Transit Rail Operations	50	Commuter	Bombardier
New York (NYCTA)	10	Rapid Transit	NIAC/Kawasaki
	9	Rapid Transit	Bombardier
New York (LIRR)	10	Prototype bi-level commuter	Mitsui/Tokyo Car
Philadelphia (SEPTA)	26	Rapid transit	ABB Traction
Sacramento	10	Light rail	Siemens-Duewag
San Diego (MTDB)	16	Light rail	Siemens-Duewag
San Francisco (BART)	14	Rapid transit	Soferval
St. Louis (Bi-State)	31	Light rail	Siemens Energy Automation
Toronto (GO Transit)	83	Commuter	UTDC, Inc.
Toronto (TTC)	2	Rapid transit	UTDC, Inc.
Washington (WMATA)	68	Rapid transit	Breda
Total	**554**		

Plus: Amtrak—60 mail/baggage cars (Thrall)

Orders likely to develop in 1990:

Purchaser	No. of cars	Type
Baltimore (MARC)	25	Commuter
Boston (MBTA)	70	Commuter
	86	Rapid transit
Chicago (CTA)	256	Rapid transit
Los Angeles (LACTC)	22-32	Rapid transit
	40	Commuter
Los Angeles (SCRTD)	42*	Rapid transit
Maryland (Montgomery Co. DOT)	8	Light rail
NJ Transit Rail Operations	0-25	Commuter
New York (Metro-North)	58	Commuter
Northern Indiana (NICTD)	14	Commuter
San Francisco (MUNI)	50	Light rail
Toronto (TTC)	80-124	Rapid transit
Virginia, northern (NVTC)	38	Commuter
Total	**789-868**	

*Would be purchased by exercise of option with Breda.

Plus: Boston (MBTA) 15 locomotives
Los Angeles (LACTC) 10 diesel locomotives

The five year (1991-1995) outlook:

Purchaser	No. of cars	Type
Amtrak	462	Intercity
Baltimore (MTA)	0-20	Light rail
Baltimore (MARC)	15-50	Commuter
Boston (MBTA)	75-100	Light rail
	69-130	Rapid transit
Buffalo (NFTA)	8-10	Light rail
Chicago (CTA)	0-118	Rapid transit
Chicago (Metra)	150-173	Commuter
Los Angeles (LACTC)	0-12	Rapid transit
	40	Commuter
	0-30	Light rail
Los Angeles (SCRTD)	0-42**	Rapid transit
New Orleans (RTA)	0-4	Light rail
New York (NYCTA)	320-460	Rapid transit
New York (LIRR)	108	Commuter
New York (Metro-North)	80-183	Commuter
Northern Indiana (NICTD)	6-12	Commuter
Philadelphia (SEPTA)	40	Rapid transit
	40	Light rail
Portland (Tri-Met)	7-10	Light rail
Sacramento	14-54	Light rail
San Diego (MTDB)	25-50	Light rail
San Francisco (Caltrans)	10-15	Commuter
San Francisco (MUNI)	130***	Light rail
St. Louis (Bi-State)	15	Light rail
Toronto (GO Transit)	50-100	Commuter
Toronto (TTC)	0-25	Light rail
Vancouver (BC Transit)	10-20	Light rail
	0-208	Rapid transit
Virginia Beach/Norfolk (Tidewater Transp. Dist.)	16-20	Light rail
Virginia, northern (NVTC)	0-20	Commuter
Washington (WMATA)	32-72	Rapid transit
Total	**1,727-2,793**	

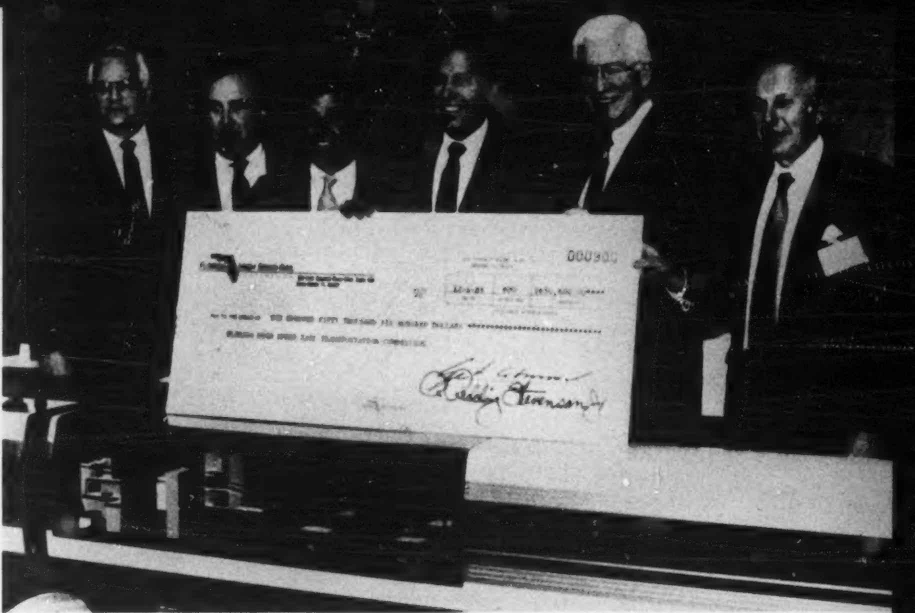
**Would be purchased by new procurement if Breda option is not exercised.
***Plus 20 PCC rebuilds.

Plus: Boston (MBTA) 5-14 locomotives
Los Angeles (LACTC) 10 diesel locomotives.
Northern Indiana (NICTD) 2-4 diesel electric locomotives
Philadelphia (SEPTA) 1[illegible] locomotives

NOTE: This listing does not include people-movers—e.g., the Matra cars now in service in Jacksonville, Fla., and on order to Chicago's O'Hare Airport, or the AEG Westinghouse people-movers ordered last year by Metro-Dade (Miami) or JFK International Airport, among others. These will be covered in a special report later this year; beginning next year, *Railway Age's* annual listing will be expanded to include all guided transport passenger vehicles.

the fact is that the big bulges of the early and mid-'80s were created by unusually big numbers of NYCTA orders which have now been completed.

NYCTA will soon be creating new bulges in the charts as it begins to phase in a whole new generation of cars in the mid- and late-'90s. Just a few weeks ago NYCTA awarded contracts to two builders—Bombardier of Canada and NIAC/Kawasaki of Japan—to construct prototype "new technology" trainsets. Bombardier's $19.5-million contract calls for nine 67-foot cars for the "B" Division (IND/BMT); NIAC/Kawasaki's $19.85 million contract is for ten 51-foot cars for the "A" Division (IRT). Each set of cars will be subjected to more than a year of rigorous testing before any production orders are awarded. Before the end of the century, New York expects to order 1,500 or more of the new generation cars. Among various new features, the new cars will incorporate a.c. propulsion. The IRT cars will have four doors on each side, to determine whether an extra door will improve passenger circulation.


In Tampa last month, Florida Governor Bob Martinez accepted a $650,000 check on behalf of the state from the Florida High Speed Rail Corp., which wants a franchise to build a 300-mile high speed rail system utilizing Asea Brown Boveri (ABB) technology. Left to right: FHSRC President R. Redding Stevenson; Bruce W. Wilkinson, chairman of CRSS Inc., a leader of the consortium; Malcolm Kirschenbaum, chairman of the Florida High Speed Rail Commission; Governor Martinez; Federal Railway Administrator Gilbert E. Carmichael; and Dr. Klaus Agthe of ABB.

Both Bombardier and NIAC/Kawasaki are already known to NYCTA as quality builders. During the '80s, Bombardier supplied 825 "A" Division cars to New York, and NIAC/Kawasaki supplied 325 "A" and 200 "B" units.

- **Friends in Congress.** The North American rail transit renaissance has been gaining momentum ever since the federal government began to assist urban transit in a substantial way a couple of decades ago—and it continues to gain momentum despite efforts to cut back on federal aid that began in the early years of the Reagan presidency. Passenger railroads—whether intercity, suburban, or urban—have a strong constituency in Congress, and Congress once again last year repelled efforts from the White House to cut back substantially on aid to Amtrak and to mass transit.

The 100th Congress, in addition to voting Amtrak a subsidy of $582 million, about 90% of what the railroad had requested, also approved a 1990 appropriation for the Urban Mass Transportation Administration (UMTA) of $3.048 billion, just slightly below the $3.155 billion provided in 1989. The new appropriation earmarks $430.7 million for rail modernization and $419.2 million for new starts and extensions. In the latter category, Los Angeles will get $139.6 million; Atlanta, $52.3 million; and St. Louis, $67.3 million. A separate fund of $84.7 million is earmarked for the Washington Metro.

- **High speed's slow track.** As for the future of intercity passenger rail, Washington seems to be sending out mixed signals.

On the one hand, Raul V. Bravo, chairman of the Railway Progress Institute's High-Speed Rail Task Force, felt compelled a few weeks ago to tell DOT Secretary Samuel K. Skinner that he was "extremely distressed to hear that you do not consider rail passenger transportation to be one of the critical components constituting a balanced transportation network."

Commenting on remarks Skinner had made at a Capitol Hill Club breakfast, Bravo told the Secretary: "We are certainly in full agreement with you that an efficient transportation network is an absolute necessity to bring our nation's productivity to competitive levels; but we must disagree with your statement that only air and highways can provide such a tool." Bravo said rail transportation can be provided for $3 million to $8 million per mile vs $10 million to $20 million per mile for a comparable capacity highway, and he added: "Rail is a much more efficient energy user than automobiles and planes and will help to reduce U.S. dependency on foreign oil, not to mention the benefits of reduction in air pollution."

On the other hand, Gilbert Carmichael, the head of DOT's Federal Railroad Administration, has emerged as a strong advocate of passenger rail, both Amtrak and various proposed high-speed corridors. In an interview with *Railway Age* he predicted that Amtrak might reach self-sufficiency by the year 2000, given the proper equipment, and he also said he expects to see both conventional high-speed rail and mag-lev corridors in operation by the turn of the century (see p. 40).

Any apparent conflict between the DOT secretary and his FRA Administrator is probably just that—apparent, not real. There's no evidence that Skinner opposes passenger rail as long as the federal government doesn't have to pay for it. And Administrator Carmichael, in addition to looking for a self-sufficient Amtrak, is also supporting high-speed corridors that would be paid for by private developers.

Private financing is exactly what the States of Florida and Texas have in mind as they proceed with their own high-speed plans. A consortium built around Asea Brown Boveri (ABB) technology recently paid Florida $650,000 for the privilege of continuing to seek a franchise to build a $2.5 billion line connecting Miami, Orlando and Tampa. Such a franchise is expected to be awarded in 1991. Meanwhile, a consortium led by Morrison-Knudsen and built around Bombardier/GEC Alsthom (TGV) technology, is seeking a franchise to build a $2.2-billion line linking Houston with Dallas-Fort Worth and, eventually, San Antonio and Austin. Texas is expected to make a decision in mid-1990. Less advanced are proposals for mag-lev lines in Pennsylvania and Nevada-California.

If and when these proposals begin to come to fruition, tomorrow's passenger railcar market could make today's seem like peanuts. ■

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Railway

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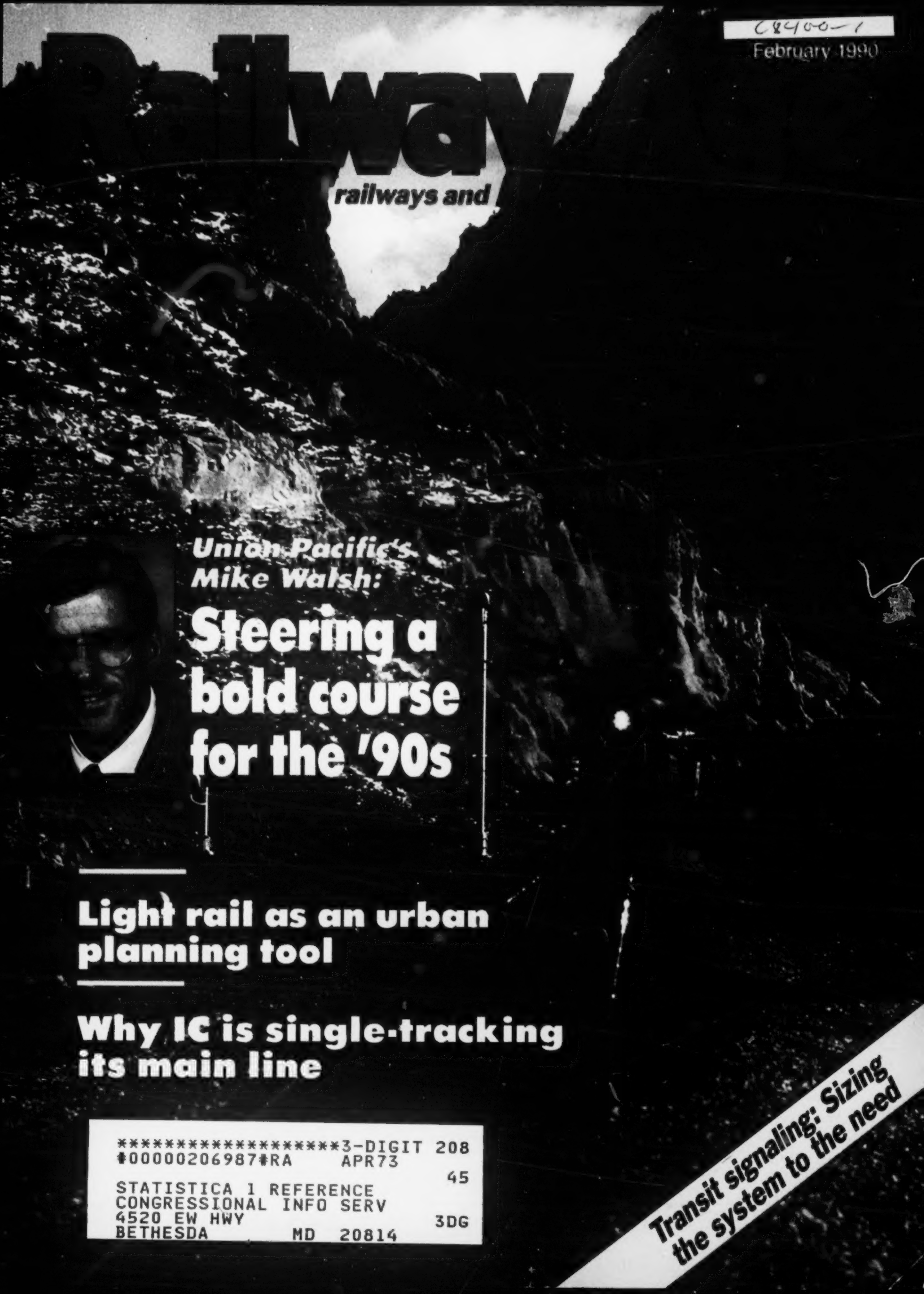

Union Pacific's Mike Walsh:

Steering a bold course for the '90s

Light rail as an urban planning tool

Why IC is single-tracking its main line

Transit signaling: Sizing the system to the need

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Railway Age

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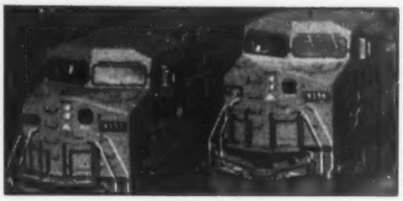

27 **UP's Mike Walsh charts a bold course**

"A world class company, the best in the world at what we do...." That's the goal UP hopes to achieve through higher levels of productivity, efficiency, and service.

31 **Iron Highway due for test**

Under an agreement with CSL Intermodal, New York Air Brake hopes to bring to the prototype stage its High Productivity Integral Train concept.

32 **Why Illinois Central is single-tracking**

By removing nearly 500 miles of track on its Chicago-New Orleans main line and installing a new ctc system, IC says it will simultaneously cut costs and improve service.

37 **Finding (and fixing) faulty crossties**

Pandrol now offers railroads a tool which it says more accurately assesses wood-tie condition—plus a wood preservative implant to extend tie life where decay is detected.

39 **Transit: Signaling for efficiency**

Because transit operations differ so widely, there's no one "best" signaling system—but here are broad guidelines to help planners fit the solution to the need.

1990 Light Rail Planner's Guide

Light rail as an urban planning tool.......LR2

Contributing Editor William D. Middleton describes how Portland, Ore., has made its MAX light rail system a key element of urban planning actions that have helped to make the City of Roses one of America's most livable urban areas.

Who's Who in Light Rail Transit ..LR12

An updated directory of manufacturers, consultants, and other companies that offer light rail planners a wide spectrum of services, ranging from consulting to hardware to operation.

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INSIDE

What's that again, Mr. Skinner?

LUTHER S. MILLER

Not for many years have we seen in the high councils of government such an ardent and articulate champion of railroads as Gilbert E. Carmichael, the Federal Railroad Administrator. Mr. Carmichael wants to see more freight move by rail and less by highway, because he believes such a course would salubriously affect the economy, the ecology, and energy conservation. Indeed, he has been so outspoken on this subject that he has stirred considerable wrath among highway lobbyists, and even some concern among railroad lobbyists, who fear that too much pro-railroad sentiment at the U.S. DOT could have a backlash effect at law-making time. Actually, there appears to be little reason for worry on this score: Mr. Carmichael's boss, DOT Secretary Samuel K. Skinner, has seemed to go out of his way to avoid mentioning railroads, either favorably or unfavorably, a snub that was evident most recently at the DOT-sponsored TransExpo, as Bob Lewis notes in his Perspective column (p. 58). When Mr. Skinner did mention railroads in his TransExpo speech, it was to salute them for their "leadership and capability to find innovative systems" as demonstrated by "maglev and high-speed rail." Was he perhaps talking about Japan, France, or Germany?

Mr. Carmichael made some rather more accurate, and sobering, comments on the U.S. passenger scene:

"We began this century with pretty high speed railroads," he said. "A human being could move around this country in 1901 at about 60, 80, and 100 mph by rail. . . .With all the highway systems and all the automobiles we have right now, the average speed is about 40 mph. Isn't that something: We started this century with an average speed of 80 or 90 mph and now with a greatly expanded transportation system we're moving at 40 mph."

While sharing Mr. Carmichael's melancholy sentiments we must point out (as we in fact do in each issue of this magazine, in our transit section) that there's more to passenger railroading than speeding bullet trains and floating maglevs. Amtrak is thriving, though at low speed; and commuter, rapid transit, and light rail systems are prospering and expanding. The latest evidence of this is summarized in the Light Rail Planner's Guide which occupies the center position in this issue.

David P. Morgan, 1927-1990

There are railfans, and there are fans of railroading. David P. Morgan happened to be both. During his 39 years at *Trains* magazine, he wrote with style and feeling about those things in our industry's history which so preoccupy the train buff; he also wrote incisively and with uncompromising integrity about the successes and failures of contemporary railroading as he saw it. Dave Morgan died Jan. 10 of complications resulting from emphysema, mourned by all who admire what he accomplished at *Trains*—indeed, by all who love trains.

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...for the new age of railways and rail transit

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Capital Expenditures

Canadian National: Has budgeted $340 million (Canadian) for capital improvements in 1990. About half will be spent on maintenance and renewal of the core rail network; the remainder is earmarked for new equipment and such technical developments as the introduction of cabooseless trains and continuation of work on an Advanced Train Control System. CN is acquiring 90 new locomotives (30 for intermodal service in the East and 60 for service in the West) costing a total of $180 million, and is taking delivery of 100 new intermodal cars valued at nearly $30 million; these will be capable of carrying either trailers or double-stacked containers.

Equipment

Amtrak: Is seeking technical proposals, to be followed by cost proposals, for a new equipment fleet. An initial order for 50 cars is planned, with options for 166 more cars over a five-year-period.

Chicago Transit Authority: Awarded a $208 million contract to Morrison Knudsen for the supply of 256 rapid transit cars. Morrison Knudsen had earlier announced that it was the apparent low bidder, at $190 million, to supply 232 cars to CTA (*RA*, Dec. 1989, p. 12). The contract that was awarded last month included exercised options. Further contract options could increase the total order to 374 cars valued at $311 million. MK, now the only U.S.-owned corporation which builds transit cars in the U.S., will manufacture the Chicago cars at its Hornell, N.Y., plant.

Kansas City Southern: Ordered 12 six-axle, 3,800-hp SD60 diesel-electric units from the GM Locomotive Group. The Electro-Motive Division units will be assembled in Canada and are scheduled for fourth-quarter delivery. KCS has been taking delivery on 10 SD60s ordered earlier, the first new locomotives acquired by the railroad since 1981.

Metra: Will seek proposals for the supply of 200 or more gallery-type commuter cars. Financing will be made possible by a special state gasoline tax that is expected to add about $500 million over the next five years to the capital improvement funds of the Chicago-area commuter railroad agency.

Facilities

Conrail: Placed an order with DSL Dynamic Sciences Limited of Montreal for supply and installation of a Modular Locomotive Simulator. The simulator will be customized for Conrail to include all existing locomotive cab equipment and safety devices and their operating characteristics. It will be installed at Conway, Pa., where it will be used for training locomotive engineers.

Revenue freight carloadings

Commodity	Jan. 13 week	Jan. 6 week	Dec. 30 week	Dec. 23 week
Grain	33,364	29,961	24,789	28,091
Other farm products	2,508	2,776	1,640	2,174
Metallic ores	16,646	16,302	17,423	19,771
Coal	129,624	111,646	79,620	102,072
Crushed stone, gravel and sand	11,798	9,932	6,568	7,829
Nonmetallic minerals	8,662	7,248	5,990	9,176
Grain mill products	10,248	9,275	8,386	9,860
Food and kindred products	9,158	7,964	6,421	8,729
Primary forest products	9,529	8,111	5,604	7,996
Lumber and wood products	5,801	5,204	4,778	6,334
Pulp, paper and allied products	10,837	11,013	9,765	9,657
Chemicals and allied products	27,677	25,515	21,115	26,584
Petroleum products	5,269	4,458	3,733	5,078
Stone, clay and glass products	8,861	7,669	6,125	7,198
Coke	5,661	5,463	5,411	5,127
Metals and products	9,294	8,287	7,150	8,041
Motor vehicles and equipment	10,087	7,279	6,201	14,864
Waste and scrap materials	8,296	6,065	4,610	6,840
All other carloads	6,134	4,966	3,909	5,636
Total Cars Loaded	**329,454**	**289,134**	**229,238**	**291,057**
% change from previous year	(4.6)	(1.1)	(10.7)	(12.5)

		% change
Cumulative totals: 52 weeks (1989)	17,260,811	(1.7)
2 weeks (1990)	618,588	(3.0)

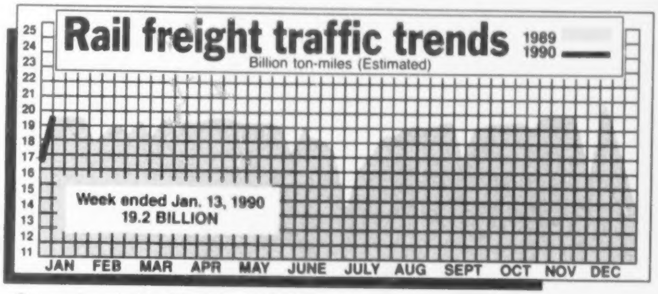
	Jan. 13	Jan. 6	Dec. 30	Dec. 23
Estimated revenue ton-miles (billions)	19.2	16.7	13.1	16.7
% change from previous year	(3.5)	(.6)	(9.7)	(12.6)

Total:		% change
52 weeks (1989)	1,003.3	.3
2 weeks (1990)	35.9	(1.4)

Intermodal traffic

	Jan. 13	Jan. 6	Dec. 30	Dec. 23
Trailers	63,091	48,474	46,854	65,224
Containers	51,653	43,245	38,802	46,997
Total	**114,654**	**91,719**	**85,656**	**112,221**
% change from previous year	4.0	6.2	(2.0)	(.7)

		% change
Cumulative total: 52 weeks (1989)	5,949,098	2.9
2 weeks (1990)	206,373	5.0



Source: Association of American Railroads

For the record

In the "Passenger-car market at a glance" listing which appeared on p. 33 of the January 1990 issue, two lines of type were inadvertently transposed, rendering the Toronto and Vancouver entries under "The five year (1991-1995) outlook" inaccurate. The correct figures: Toronto (TTC) over that period plans to order 0-25 light rail cars and 0-208 rapid transit cars; Vancouver (BC Transit) plans to order 10-20 light rail cars.

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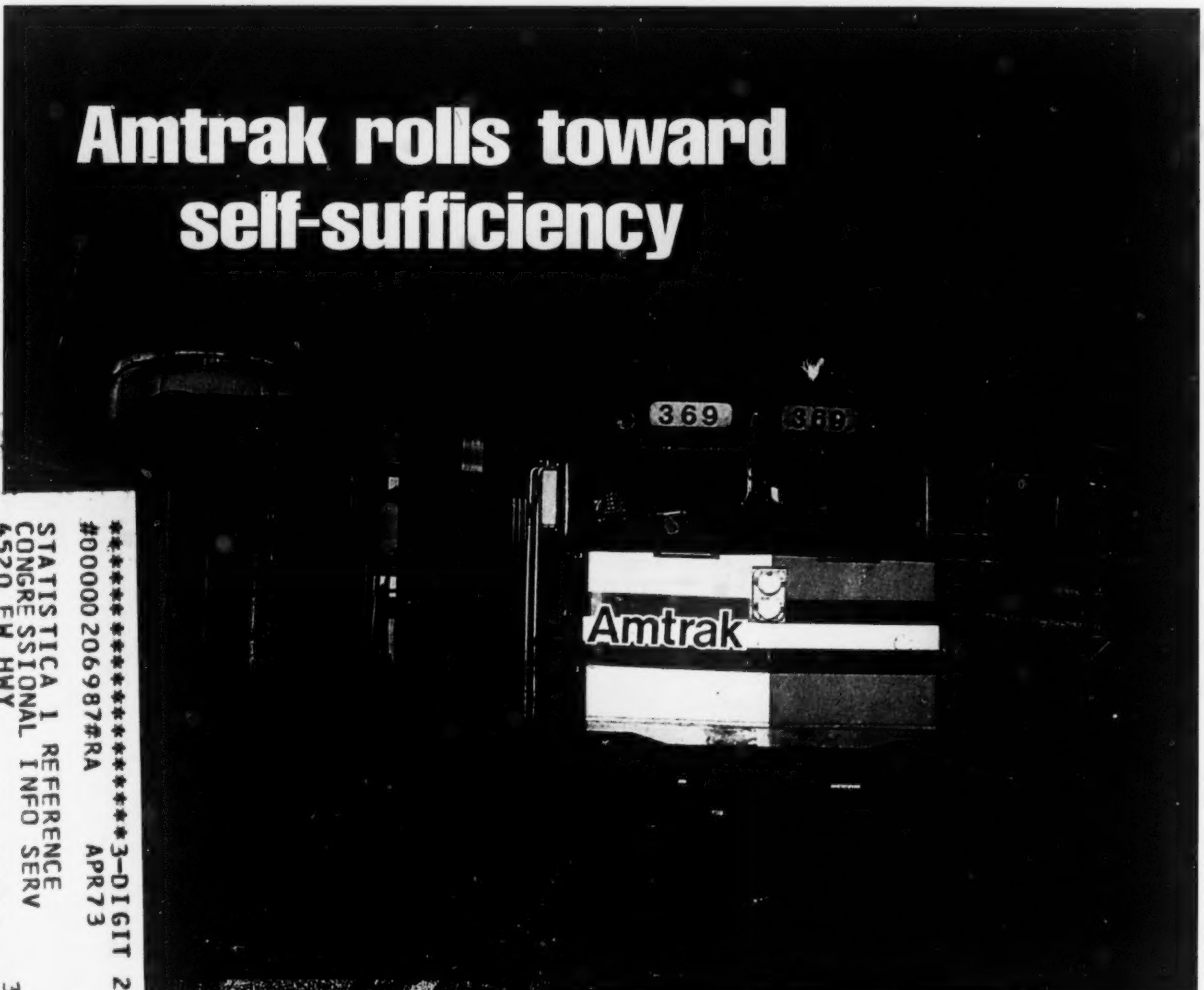

Amtrak rolls toward self-sufficiency

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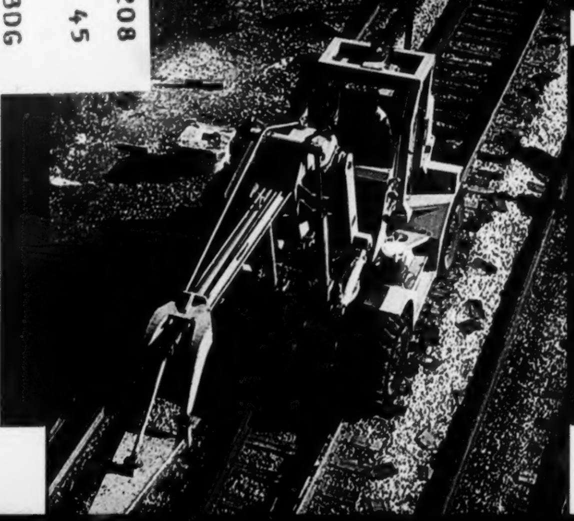

M/w at Santa Fe: Careful planning pays off

Centralized dispatching: The jury is still out

March 1990

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1990 Railroader's Guide to Washington

The updated *Railway Age*/Unit name-rank-and-phone-number directory of key Washington contacts appears in a special section immediately following page 42 in the regular pagination.

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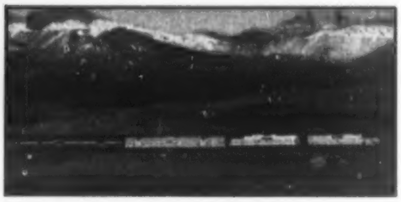
The railroad is investing an expanded, $120 million m/w capital budget on busy main lines where intermodal traffic requires speed and reliability.

35 Dispatching: One goal, two approaches

CSXRT and UP have centralized all train control functions. Others, like Santa Fe, are keeping control at the regional or division level. All have their reasons.

39 Shops: Less can be more

BN and Santa Fe are among those railroads that are getting more and higher-quality work done as they travel the shop-consolidation route.



43 Amtrak rolls toward self-sufficiency

As Amtrak moves steadily toward its goal of covering all operating costs with revenues, President W. Graham Claytor, Jr., describes what still needs to be done.

51 Marketing moxie at Metra

Chicago's Metra claims to run "the nation's finest" commuter system; steadily rising ridership figures indicate the message is getting across.

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29 San Diego commuter line to open in '92
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29 Incentive fares planned by CTA

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INSIDE

Amtrak: What happens if...?

LUTHER S. MILLER

The collision of politics and principle is not a pretty sight for the squeamish, but in Washington it happens with sufficient frequency that it passes almost unnoticed. Talking one way and acting another is a non-partisan activity that carries little opprobrium in a town where the one thing safer than straddling the fence is to appear to be on both sides of it.

We were treated to a splendid demonstration of this when the Bush Administration, in almost the same breath that it asked Congress to cut off Amtrak's life-support system, also wished Amtrak the best of luck and a long life. Thus did the White House at once genuflect to the principle of getting the government out of the transportation business and bow to the political reality that the electorate likes Amtrak trains and Congress is not about to slap the hands that pull the voting levers.

Amtrak, meanwhile, continues to go efficiently about the business of moving people—a business that within a few years, Amtrak President W. Graham Claytor, Jr., believes, will be able to cover its operating costs with revenues. How Amtrak hopes to achieve this milestone, which would make it unique among the world's major rail passenger systems, was one of the things Mr. Claytor talked about in a recent interview with *Railway Age* (p. 43).

This is the sixth time that the White House has asked Congress to eliminate Amtrak's operating subsidy. Suppose the unthinkable happened—suppose principle did prevail, and Amtrak had to go out of business. Here's what the immediate impact would be, as Amtrak analysts see it:

—About 23,900 jobs would be lost.

—Discontinuance of service would trigger $2.7 billion in legally-imposed labor protection payments to Amtrak workers.

—The cost of operating and maintaining the Northeast Corridor would fall on state commuter authorities and railroad freight shippers. Additional costs of over $120 million a year would have to be met by MDOT (Maryland), SEPTA (Pennsylvania), NJ Transit, MBTA (Massachusetts), Connecticut DOT, and Conrail.

—New operators would have to be found for Boston's commuter trains and Chicago's Union Station, which is used by 98,000 Metra commuters.

—The 30,000 daily non-commuter passengers who ride Amtrak between Northeast Corridor cities would have to find new means of transport. The 4,400 daily passengers who ride Amtrak between the end points of New York and Washington would also have to find another way. To carry 4,400 passengers by air, an additional 60-70 airline flights a day would be needed, mostly in peak travel times.

—About 500 communities now served by Amtrak—more than are served by all the major airlines combined—would lose train service.

More to the point, perhaps, is the fact that if Amtrak *is* done in by the ideologues, the government will have written "finis" to one of its great success stories. Amtrak earned a record $1.27 billion in revenue last year, and was able to pay 72% of its operating costs from income vs. 48% 10 years ago; 100% is the goal 10 years from now.

It is difficult to believe that real conservatives in this or any Administration will willingly squander such a national asset.

Railway Age
...for the *new* age of railways and rail transit

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Facilities

Gateway Western: Will spend approximately $26 million on capital projects over the next two years, primarily on improvements to its Kansas City-East St. Louis main line. Gateway Western Railway, formed from lines formerly operated by the Chicago, Missouri & Western, has lines linking Kansas City, St. Louis, and Springfield, Ill., with service to Chicago under a haulage arrangement with Southern Pacific. The new railroad has a long-term contract with the Santa Fe for haulage of freight between Kansas City and East St. Louis (*RA*, Oct. 1989, p. 28).

New York City Transit Authority: Will soon seek cost proposals from Cubic Western Data and CGA for the supply of automatic fare collection equipment. Tests of both Cubic and CGA equipment have been under way for nearly two years (*RA*, March 1988, p. 16). The value of the production order was originally estimated at $100 million; by current estimates it could go as high as $200 million. The tests involved new turnstiles capable of accepting both tokens and magnetically coded cards. The project has recently been held up by failure of the New York State Legislature to renew a law permitting NYCTA to negotiate contracts rather than go the low-bid route, an oversight that is expected to be corrected this year.

Orange County (Calif.) Transportation Commission: Awarded a contract to Parsons Brinckerhof Quade & Douglas to conduct an 18-month study of rail transit needs to the year 2010 and beyond. A plan is to be developed for a rail network with recommendations for new corridors where there are no existing railroad rights-of-way and for connections of rail lines to adjacent counties or as part of a larger system. Various rail technologies for different areas of the county are to be evaluated, including light rail, monorail, automated guideways, and high speed rail (for a proposed Anaheim-Las Vegas line).

Equipment

Burlington Northern: Plans to acquire 1,000 100-ton covered hopper cars for movement of grain as part of a $113-million 1990 program for purchase, lease and upgrading of freight cars and containers. Also included in the new-equipment program will be acquisition of 240 rotary-dump gondolas, 460 auto racks, and 120 100-ton boxcars.

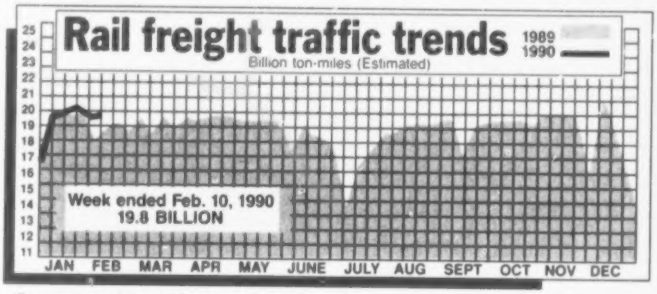
Revenue freight carloadings

Commodity	Feb. 10 week	Feb. 3 week	Jan. 27 week	Jan. 20 week
Grain	33,145	31,973	34,788	33,368
Other farm products	1,577	2,062	2,073	2,415
Metallic ores	15,118	15,523	17,773	16,567
Coal	133,601	130,153	132,268	133,163
Crushed stone, gravel and sand	12,615	12,375	12,408	12,491
Nonmetallic minerals	8,654	9,758	9,323	3,505
Grain mill products	10,226	10,067	10,167	10,135
Food and kindred products	8,952	9,360	9,157	8,978
Primary forest products	10,238	9,988	9,864	10,283
Lumber and wood products	6,472	6,981	6,992	6,747
Pulp, paper and allied products	10,564	10,736	10,742	11,136
Chemicals and allied products	27,654	28,430	28,702	29,212
Petroleum products	4,850	4,535	5,108	5,601
Stone, clay and glass products	9,703	9,076	8,888	9,169
Coke	5,578	5,217	5,505	5,487
Metals and products	9,444	10,475	10,588	9,782
Motor vehicles and equipment	17,327	15,568	16,388	12,680
Waste and scrap materials	8,753	8,438	8,654	8,664
All other carloads	7,146	6,654	6,476	6,438
Total Cars Loaded	341,617	337,369	345,864	340,821
% change from previous year	9.9	4.6	.8	(.9)

		% change
Cumulative total: 6 weeks	1,985,066	1.4

	Feb. 10	Feb. 3	Jan. 27	Jan. 20
Estimated revenue ton-miles (billions)	19.8	19.6	20.1	19.8
% change from previous year	10.1	4.8	1.0	(1.0)

Total:	1990	1989	% change
6 weeks	115.2	113.0	1.9



Source: Association of American Railroads

Intermodal traffic

	Feb. 10	Feb. 3	Jan. 27	Jan. 20
Trailers	66,881	68,948	66,797	64,747
Containers	52,445	51,440	51,332	48,562
Total	119,326	120,388	118,129	113,309
% change from previous year	7.9	4.7	2.9	.4

		% change
Cumulative total: 6 weeks	677,897	4.3

Freight cars

	DELIVERED		ORDERED		ON ORDER AND UNDELIVERED	
	4th quarter 1989	4th quarter 1988	4th quarter 1989	4th quarter 1988	Jan. 1 1990	Jan. 1 1989
Built new by carbuilders	7,672	7,864	8,196	8,044	16,691	15,953
Built new in RR shops	25	0	25	0	0	0
Built new—Total	7,697	7,864	8,221	8,044	16,691	15,953
Rebuilt	380	143	380	0	0	0
TOTAL	8,077	8,007	8,601	8,044	16,691	15,953
Locomotives (new and rebuilt)	185	267	N/A	N/A	102	256

Source: Transportation Div., AAR and American Railway Car Institute

Steady climb seen in freight car deliveries, from 30,400 in 1990 to 46,500 in 1994

The latest forecasts from ECAP—Economic Consulting & Planning, Inc.—indicate that after a 1990 much like 1989, both rail freight traffic and railcar acquisitions will increase substantially each year through the 1991-94 period.

On the traffic side, the projections are for carloadings to decline slightly in 1990 and then pick up to 17,675,000 in 1991, 18,233,000 in 1992, 18,851,000 in 1993 and 19,378,000 in 1994. Comparing 1989 traffic with the levels forecast for 1994, ECAP sees increases in all but three of 19 commodity categories (pulp and paper, food and food products, and grain mill products).

On the railcar acquisition side, ECAP's researchers look for just a modest increase in deliveries this year, to about 30,400 units. But then they see car construction activity increasing to 34,300 cars in 1991, 40,400 in 1992, 44,500 in 1993 and 46,500 in 1994. In 1994, ECAP is projecting that carbuilders will be turning out 9,500 flat cars, 9,500 tank cars, 9,000 covered hopper cars, 9,000 open-top hoppers, 8,000 gondolas, 1,500 boxcars and 500 other cars.

Peter M. Toja, senior vice president of ECAP, and Kenneth J. Kreman, director-capital goods, freight transportation, see four main factors contributing to the revival in freight-car demand beginning in 1991:

—By 1994, rail commodity loadings "are expected to total 19.4 million, 12.8% above our estimate for 1990. On average, commodity loadings will grow 3.2% per year during the 1991-94 period. Intermodal loadings are slated to grow 17.5% or 4.5% per year on average, reaching 6.9 million by 1994."

—The freight-car fleet "has aged dramatically during the decade of the '80s, despite the scrapping of nearly 470,000 cars between the end of the last buying cycle in 1981 and the beginning of this year. The average age of the fleet is currently estimated at 16.4 years versus 13.8 years in 1981. At the beginning of 1989, 364,000 cars, or 29% of the fleet, had been in service for more than 20 years. Prior to the start of the last buying cycle in 1978, 24% of the fleet had been in service for more than 20 years."

—Beyond the numbers indicating calendar age, "the railroads' efforts to improve efficiency have subjected these aging cars to increased utilization. We estimate that on average a freight car made 17.5 trips in 1989. Coming out of the 1982 recession, the average number of trips was closer to 14.5 per year. This suggests that many of the cars in service may be closer to the end of their useful life than would be indicated only by calendar age."

Freight cars: A projection

(thousands)

Year	Fleet	Loadings	Calculated Utilization*	New Demand	Units Scrapped	Deliveries
1982..	1588	19344	14.74	-85.0	102.2	17.2
1983..	1542	19748	14.35	-46.0	51.8	5.8
1984..	1486	21124	15.85	-56.0	68.4	12.4
1985..	1422	19702	14.88	-64.0	76.1	12.1
1986..	1340	19641	15.50	-82.0	93.5	11.5
1987..	1288	21193	17.17	-52.0	65.2	13.2
1988R.	1239	20825	17.33	-49.0	71.5	22.5
1989..	1205	20400	17.51	-34.0	63.8	29.8
1990..	1180	20140	17.54	-25.0	55.4	30.4
1991..	1165	20700	18.11	-15.0	49.8	34.3
1992..	1150	21340	18.80	-15.0	55.4	40.4
1993..	1140	21930	19.32	-10.0	54.5	44.5
1994..	1132	22470	19.88	-7.0	53.5	46.5

*Utilization is an estimate of trips-per-year by the effective fleet—Total less Class I railroad surplus.

Source: AAR, ARCI, ECAP, Inc.

—The Class I railroad freight-car surplus "was recently reported at about 35,000 cars versus a peak of 276,000 in 1982. Whatever real surplus there is this year will disappear as traffic revives next year. This in turn will lead to purchases of new equipment."

ECAP's analysis of the 1990-94 period sees the total number of cars in the fleet declining from about 1,180,000 currently to about 1,132,000 in '94, with scrapping rates running in the low to mid 50,000s each year during that period.

ECAP also sees continued increase in freight-car utilization, with trips-per-year climbing steadily from the 17.5 estimated for 1989 and 1990 to 18.1 in 1991, 18.8 in 1992, 19.3 in 1993 and 19.8 in 1994. Trips per year were only 14.7 in 1982.

In tracking carloadings growth by commodity, ECAP is projecting 1994 loadings of 7,500,000 cars of coal, 1,670,000 of grain, 1,610,000 of chemicals, 1,070,000 of motor vehicles and 1,085,000 of metallic ores. Analysts see increases for each commodity in each year of the 1991-94 period, although loadings of motor vehicles and metallic ores are expected to drop slightly this year from 1989 levels.

Overall, most observers would probably agree that the demand for new freight cars will increase. ECAP makes strong points regarding the fact that cars in the fleet today are working harder than ever before, and that the fleet is getting older. By its reckoning, the covered hopper fleet is the youngest, with an average age of 14.7 years, with tank cars at 15.3 years, boxcars at 16.1, gondolas at 16.8, flat cars at 17.4 and open-top hopper cars at 17.5. Going beyond the averages, ECAP also notes that fleet makeup includes those 364,000 cars of age 20 years or more—75,000 open-top hoppers, 70,000 covered hoppers, 52,000 flat cars, 49,000 tank cars, 48,000 box cars and 43,000 gondolas.

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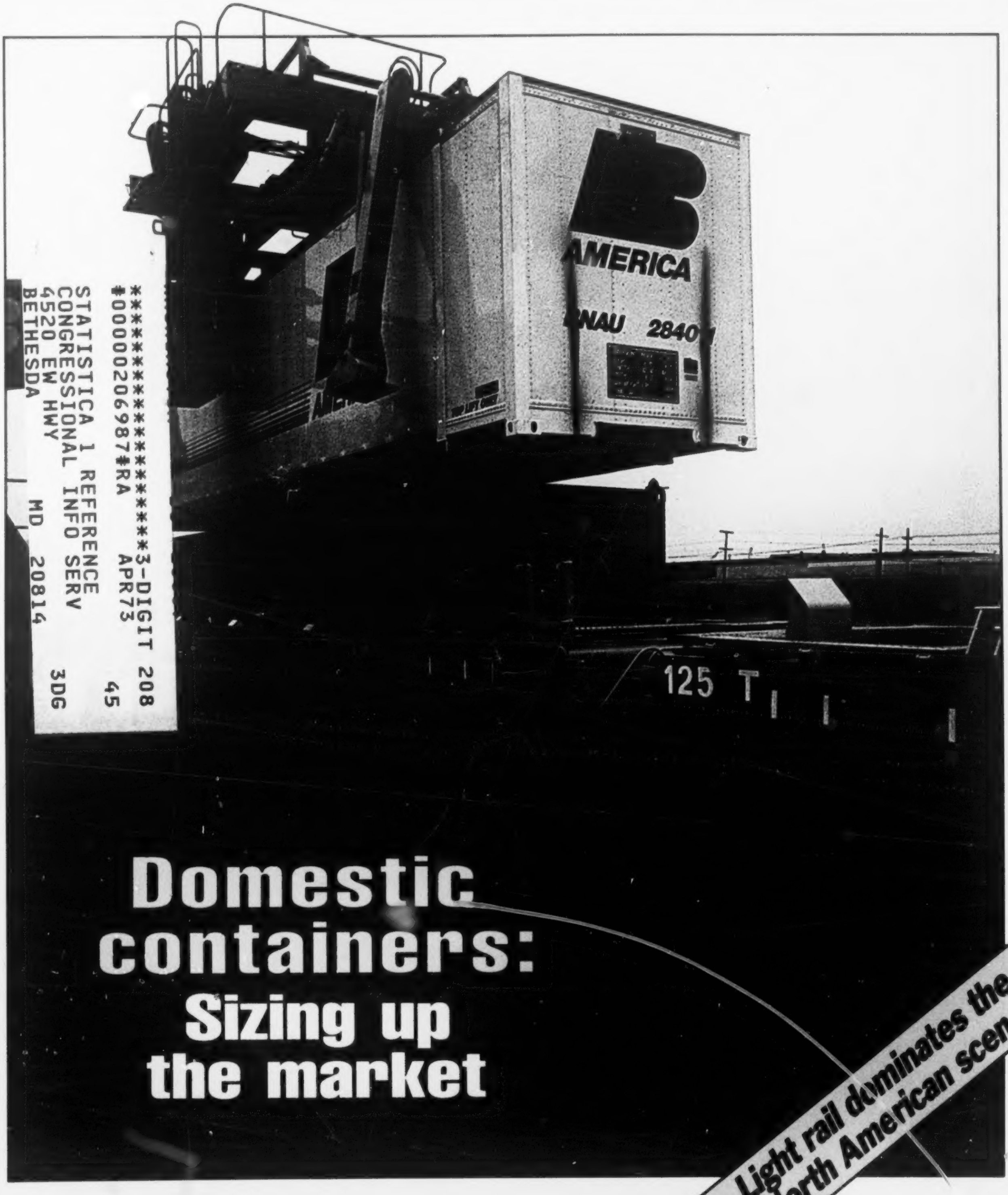

Domestic containers: Sizing up the market

Light rail dominates the North American scene

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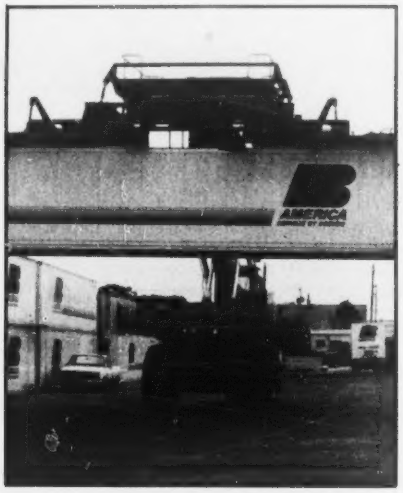

29 Domestic containers: Sizing up the market

Domestic containerization may be, as one study has suggested, only a bit player on the intermodal stage, but all signs point to a steadily expanding role.

32 Time to get S.M.A.R.T.?

Built by Trinity Industries to Union Pacific specs, the Secured Modular Automotive Rail Transport car is described as "a total system design" from the rail up.

39 What's holding up atcs?

Technologically, the advanced train control system is close to being an accomplished fact. But a big price-tag and a relatively slow return on investment will delay implementation.

43 BN studies big-car economics

After finding that there's "an economic benefit" to increasing axle loads beyond the 100-ton-per-car maximum, the railroad placed orders for high-capacity covered hoppers and gondolas.

46 Gen II: "Re-thinking" the whole locomotive

They don't come cheap, but Generation II Locomotive's Cat-powered rebuilds come with the promise of big fuel savings, lower maintenance costs, and environmental acceptability.

48 "Made in U.S.A." by M-K

With Morrison-Knudsen's capture of a Chicago Transit Authority order, a U.S.-owned builder is again producing new transit cars. M-K brings to the task a wealth of experience turning out good-as-new rebuilt cars.

53 Light Rail: A continental guide

All over North America, light rail is becoming the transit mode of choice. Contributing Editor William D. Middleton reports city-by-city on activity in the U.S., Mexico and Canada.

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INSIDE

Welcome to the Nat Welch Show

LUTHER S. MILLER

Atlanta's International Intermodal Expo—a.k.a. the Nat Welch Show—has evolved over the years into an extraordinary transportation marketplace, a marketplace that deals in both ideas and in the hardware that helps put these ideas to work on the railroads, the highways, the sea lanes, and the airways.

Intermodal Expo is remarkable in several ways. In sheer size, it dwarfs any similar exposition anywhere. The sixth Expo last year drew 3,380 paying attendees, mostly shippers and carriers, plus about 1,500 suppliers who registered as exhibitors and guided visitors through 301 indoor and outdoor displays of intermodal equipment and services.

These records promise to be equalled or exceeded at the seventh Expo, which will take place next month (May 8-10) at Atlanta's World Congress Center. By late March, 320 companies had purchased exhibit space. And a month and a half before show-time, Atlanta's ten downtown hotels were sold out and suburban hotels were beginning to put up "No Vacancy" signs.

So much for the quantitative side of the Georgia Freight Bureau's annual intermodal extravaganza.

Qualitatively, it's even more impressive.

Ask any supplier how many trade shows he has participated in, at great expense of time and money, only to discover that he's seeing more competitors than customers, and you're likely to get a grimace and a two-word answer: "Too many."

Intermodal Expo's Nat Welch

Intermodal Expo is different. Here, the customers outnumber the vendors.

Behind all of this is the organizing genius of Nat Welch, the former executive head of the Georgia Freight Bureau who now devotes all of his time to the Intermodal Expo, of which GFB remains the principal sponsor (with scores of co-sponsors from around the world). How does Welch do it?

"If you provide the nectar, you'll get the bees," is his characteristically down-to-earth explanation.

One of the bits of "nectar" at the 1990 show will be the Union Pacific's exhibit of a car that last month was being widely touted as Expo's "secret" attraction. It was, however, no secret to Senior Editor Gus Welty, whose detailed preview of UP's S.M.A.R.T. car is featured in this issue (p. 32).

The accompanying picture of Nat Welch shows Atlanta's intermodal impresario in an uncharacteristic relaxed position. He was more often to be found in recent months jetting to such international intermodal hotspots as Tokyo, Singapore, Bangkok, Seoul, Hong Kong, Bremen, Hamburg, and London, alerting the bees to where the nectar would be, come May 8.

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MARKET OUTLOOK

Equipment

Burlington Northern: Awarded a contract to Trinity Industries for the supply of 1,000 new covered hoppers at an unannounced price. Deliveries are to take place between June 4 and Oct. 31. BN's 1990 capital improvement program includes a total of $113 million for purchase, lease, or upgrading of freight cars and containers. In addition to the covered hoppers, new-car purchases will include 240 coal cars, 460 motor vehicle cars, and 120 100-ton-capacity boxcars.

CSX Transportation: Will acquire 53 new Dash 8-40C 4,000-hp diesel-electric units from General Electric this year. CSXT last year purchased 94 Dash 8-40Cs and 12 SD60s supplied by the Electro-Motive Division of General Motors. Delivery of the new order will take place in this year's third quarter.

CSX Transportation: Issued a letter of intent to Morrison-Knudsen for the remanufacture of 50 3,000-hp locomotives at a cost of approximately $32 million. The work is being done at M-K locomotive complexes in Boise, Ida., and Mountaintop, Pa. The order is to be completed by the end of 1990 with the first locomotive scheduled to be delivered this month.

Facilities

Conrail: An $8 million improvement project at Conrail's Harrisburg, Pa., intermodal terminal will expand railcar capacity from 68 to 87 and increase trailer parking capacity from 350 to 675.

CXT Inc.: Will supply 20,000 concrete ties to the Baltimore Metro to replace ties which, says CXT, "have shown early signs of distress, possibly due to lack of compatibility of the cement and the aggregate used in the manufacture of the ties." The ties will be produced by CXT's Spokane, Wash., plant. CXT has supplied 5,000 replacement ties to the Massachusetts Bay Transportation Authority. Said John White, CXT president: "Although the reason for the orders is a disappointment to the concrete tie industry, the good news is that both transit operations still have faith in the concrete tie solution."

Long Island: Will completely rebuild the two-mile Harold Interlocking in Long Island City, a nine-week project that will run from June 29 through Sept. 4. The interlocking controls the movement of 650 LIRR and Amtrak trains.

Shanghai Metro: A contract valued at $21 million has been awarded to General Railway Signal and its Chinese joint venture company, CASCO Signal Ltd., to provide the signaling and control system for the first of seven lines that will comprise the Shanghai Metro. The 14.5-km line will have 12 stations.

Revenue freight carloadings

Commodity	Mar. 10 week	Mar. 3 week	Feb. 24 week	Feb. 17 week
Grain	30,521	32,367	31,501	32,480
Other farm products	1,587	1,697	1,643	1,698
Metallic ores	15,193	16,406	15,603	15,376
Coal	129,049	127,872	129,751	130,429
Crushed stone, gravel and sand	12,572	11,341	11,564	12,488
Nonmetallic minerals	9,097	9,412	8,768	9,569
Grain mill products	9,965	10,119	10,203	10,734
Food and kindred products	8,876	9,013	8,762	9,123
Primary forest products	10,420	10,630	9,758	10,245
Lumber and wood products	6,378	7,488	6,971	6,481
Pulp, paper and allied products	10,681	10,905	11,067	11,055
Chemicals and allied products	28,567	29,706	27,484	28,958
Petroleum products	5,098	4,666	4,418	4,777
Stone, clay and glass products	10,252	9,773	9,140	9,503
Coke	5,697	5,223	5,215	5,283
Metals and products	9,340	10,161	9,663	9,642
Motor vehicles and equipment	19,281	19,581	19,100	17,633
Waste and scrap materials	8,082	8,351	8,277	8,617
All other carloads	7,070	6,094	6,262	5,959
Total Cars Loaded	**337,726**	**340,825**	**336,150**	**340,058**
% change from previous year	3.2	(.2)	2.6	.5

		% change
Cumulative total: 10 weeks	3,329,113	1.1

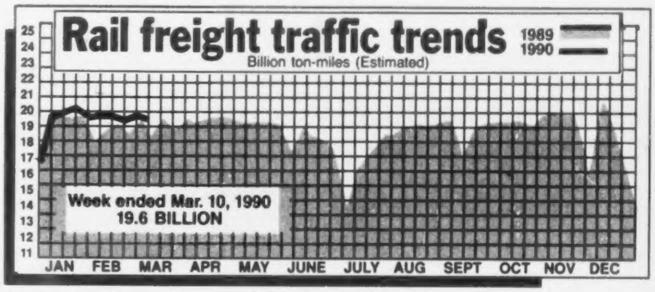
	Mar. 10	Mar. 3	Feb. 24	Feb. 17
Estimated revenue ton-miles (billions)	19.6	19.8	19.4	19.7
% change from previous year	3.7	0	3.2	.5

Total:	**1990**	**1989**	**% change**
10 weeks	193.1	190.1	1.6

Intermodal traffic

	Mar. 10	Mar. 3	Feb. 24	Feb. 17
Trailers	68,327	70,924	65,808	65,929
Containers	51,958	50,422	50,143	58,187
Total	**120,285**	**121,346**	**115,951**	**124,116**
% change from previous year	8.2	4.2	2.6	5.0

		% change
Cumulative total: 10 weeks	1,159,610	4.6



Source: Association of American Railroads

Wisconsin Central: Roadway and equipment improvements budgeted for 1990 total $20.4 million, about 20% of operating revenues, compared with an industry-wide average of 13%, according to Tom Powers, executive vice president and chief financial officer. Major items include 150 new covered hopper cars added to an earlier order for 250 cars from Bethlehem Steel; and track programs totaling $12.5 million.

C8400-1

May 1990

Railway Age

...for the new age of railways and rail transit

ABB Traction's FasTrain

GEC Alsthom's TGV

Steel-on-steel vs. maglev: The great train race heats up

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West German ICE

Transrapid Maglev

1990 REGIONAL RAILROAD PLANNER'S GUIDE

Cost-effective crossing surfaces

May 1990

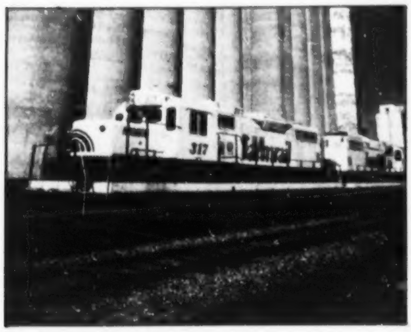
Railway Age

...for the *new* age of railways and rail transit

Features

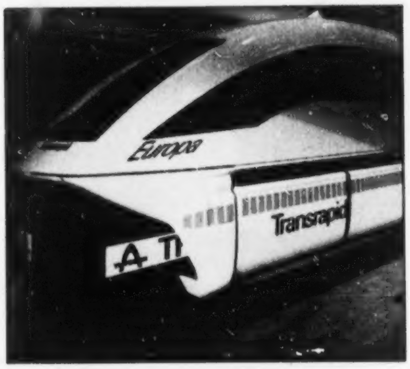
30 Crossing surfaces: Which is best?

To find which best fits your needs, one expert advises that you factor into the equation rail as well as vehicular traffic, plus initial and maintenance costs.



35 Regional Railroad Planner's Guide

If you had it to do all over again, what would you do differently? *Railway Age* put this and other questions to a cross-section of regional railroad CEOs. Their replies add up to trenchant advice for others contemplating going into the regional/short line business.



57 Toronto: Back on track?

Following years of capital neglect, the Government of Ontario plans to spend $5 billion (Canadian) on transit improvements, mostly for TTC and GO Transit.

Cover: Farmrail photo by Gary Benson

70 The high speed race heats up

Steel wheel trains—like France's TGV, Sweden's FasTrain, and Germany's ICE—remain the odds-on favorites in long-distance corridors where planning is most advanced. But maglev is coming on fast as a challenger, with test installations now planned in Florida and Pennsylvania.

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MARKET OUTLOOK

Equipment

Metro-North: Ordered 20 commuter coaches from Bombardier at a cost of approximately $20 million; exercise of an option for ten additional coaches would bring the total value of the order to $30 million. The cars will be built at Bombardier's plants in La Pocatiere, Que., and Barre, Vt.; delivery will take place in April-July 1991. The cars will be similar to 76 which Bombardier has delivered to Metro-North since 1981. They are based on a Pullman design which Bombardier acquired when it purchased Pullman Technology Inc. in 1986.

Trailer Train: Directors have approved expenditure of $360 million for new equipment in 1990, an increase of $95 million over a previously-authorized $265 million. Main purchases will be double-stack wells and intermodal platforms. In 1989, Trailer Train installed new equipment valued at $188 million. During the five-year 1985-89 period, equipment acquisitions totaled $582 million. During the five-year 1990-94 period, Trailer Train expects to install new cars worth more than $1 billion.

New York City Transit Authority: Awarded a contract to STV/Seelye Stevenson Value & Knecht for engineering design review, inspection, and test monitoring of 1,242 subway cars that are being overhauled in a three-year program costing $823 million.

British Rail: Awarded a contract to Kershaw Manufacturing Co., Montgomery, Ala., for a High Output Ballast Cleaning System (HOBC), following a worldwide competition. Kershaw says HOBC is based on the Super System that has been in use in the U.S. for more than two years. It will differ from existing ballast cleaners in several ways—a different type of excavating mechanism is used; the work rate is faster (a peak rate of 460 meters per hour is specified); and it starts work within about 15 minutes after arrival at the site without any site preparation.

Facilities

Union Pacific: Opened a $2.2-million automobile distribution facility at West Memphis, Ark., to serve Toyota and dealers in the mid-south region. The 13.2-acre facility has two 1,600-foot tracks, and a parking area for 410 vehicles.

Revenue freight carloadings

Commodity	Apr. 7 week	Mar. 31 week	Mar. 24 week	Mar. 17 week
Grain	28,840	29,482	28,706	29,233
Other farm products	1,808	1,784	1,721	1,567
Metallic ores	17,164	17,157	15,732	14,015
Coal	125,986	133,120	133,506	131,543
Crushed stone, gravel and sand	14,575	15,238	14,366	13,149
Nonmetallic minerals	9,986	10,129	9,280	9,583
Grain mill products	10,169	10,439	10,803	10,395
Food and kindred products	8,614	8,955	8,988	8,780
Primary forest products	9,856	10,331	9,910	10,351
Lumber and wood products	6,616	7,886	6,726	6,372
Pulp, paper and allied products	10,487	11,505	10,319	10,639
Chemicals and allied products	29,281	30,113	28,958	28,669
Petroleum products	4,941	5,184	5,226	4,923
Stone, clay and glass products	10,133	10,554	10,163	9,982
Coke	6,380	5,991	5,674	5,650
Metals and products	9,529	10,887	10,017	9,822
Motor vehicles and equipment	18,021	20,366	19,478	19,266
Waste and scrap materials	8,674	8,391	8,459	8,503
Forwarder and shipper assn. traffic	7,160	6,370	6,325	6,483
All other carloads				
Total Cars Loaded	**338,220**	**353,882**	**344,357**	**338,925**
% change from previous year	(2.9)	1.9	3.1	(2.1)

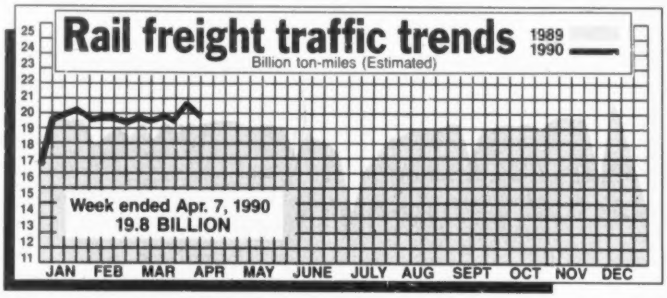
			% change	
Cumulative total: 14 weeks		4,704,486	.8	
Estimated revenue ton-miles (billions)	19.8	20.4	19.7	20.0
% change from previous year	(.5)	3.0	(1.5)	3.6

Total:	**1990**	**1989**	**% change**
14 weeks	273.1	269.1	1.5

Intermodal traffic

	Apr. 7	Mar. 31	Mar. 24	Mar. 17
Trailers	68,745	70,373	67,791	68,528
Containers	51,557	50,685	52,381	51,520
Total	**120,302**	**121,058**	**120,172**	**120,048**
% change from previous year	2.8	5.1	5.7	3.2

		% change
Cumulative total: 14 weeks	1,633,709	4.0



Source: Association of American Railroads

Freight cars

	DELIVERED		ORDERED		ON ORDER AND UNDELIVERED	
	1st quarter 1990	1st quarter 1989	1st quarter 1990	1st quarter 1989	Jan. 1 1990	Jan. 1 1989
Built new by carbuilders	8,892	7,286	5,556	11,040	13,537	19,707
Built new in RR shops	0	0	0	0	0	0
Built new—Total	8,892	7,286	5,556	11,040	13,537	19,707
Rebuilt	308	0	308	0	0	0
TOTAL	**9,200**	**7,286**	**5,864**	**11,040**	**13,537**	**19,707**
Locomotives (new and rebuilt)	N/A	N/A	N/A	N/A	N/A	N/A

Source: American Railway Car Institute

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June 1990

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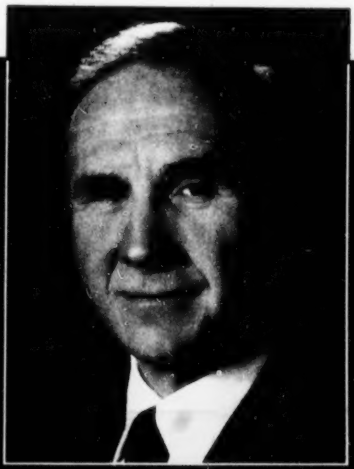

Conrail's James A. Hagen:

"Railroads *can* compete with trucks. Here's how."

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Rail transit returns to Los Angeles

Test Train
06

Preventive freight-car maintenance, BN style

Railway Age June 1990

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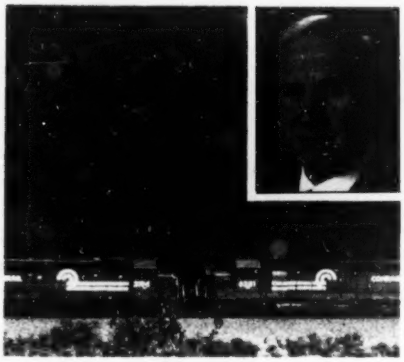
Features



27 Conrail's Hagen: "Railroads *can* compete with trucks"

To win highway traffic, the industry must offer "a better product—seamless transportation," says Conrail's CEO. But one railroad can't do it alone: "One thing we've got to get rid of in the railroad business is the not-invented-here syndrome."

34 "Preventive" payoff is big for BN

With its "total package of freight car preventive maintenance," BN is getting greater productivity from a smaller fleet and far fewer rejections of cars by shippers.

42 Tie tests: Price vs. cost

Crossties and fastening systems are coming in for more attention as axle loads get heavier. One conclusion: Premium materials don't cost—they pay.

46 L.A. Blue Line ready for riders

Rail transit will return to Los Angeles when the L.A.-Long Beach Blue Line opens in July. It's a textbook model of light rail efficiency.

51 ABB enters Canadian race

A "Sprintor" version of Sweden's tilting X2 is proposed for 150-mph service in the Quebec City-Montreal corridor.

52 For Grand Central, a grand plan

To restore the landmark terminal to its original architectural integrity—and to enhance its commercial value—a $400 million renovation is proposed.

55 BN and Amtrak try RoadRailer

Working with Boise Cascade, Burlington Northern will use RoadRailer to feed double-stacks. Amtrak will test the hybrids in mail service.

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26 Maryland MTA buys CR line for light rail

Cover: Conrail photo by Kent Patterson; Blue Line photo by David Bowen.

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Equipment

Burlington Northern: Under a contract with Rockwell International, Chrome Locomotive will install LARS (Locomotive Analysis and Reporting Systems) on 100 BN locomotives. LARS is a subsystem of ARES (Advanced Railroad Electronics System). The work is to be completed by late fall of 1990.

Maryland State Railroad Administration: Awarded a contract to ABB Traction for the medium overhaul of 13 cars purchased from New Jersey Transit and light overhaul of 23 cars currently in service on the Maryland Rail Commuter Service (MARC). The contract is valued at $7 million. The additional NJT cars will permit MSRA to extend service to Perryville on the Penn Line. The work will be performed at ABB Traction's Elmira, N.Y., facility. Delivery is scheduled to take place between March 1991 and December 1991. All of the cars were originally built by the Budd Co. between 1948 and 1950 as sleeping cars for the Pennsylvania and the Norfolk & Western. Budd converted them to commuter coaches in 1954.

Northern Virginia Transportation Commission: Awarded a $9.4 million contract to Morrison Knudsen for the remanufacture of eight locomotives, with an option for two additional locomotives. Delivery is to be completed in June 1991. The locomotives will be used on the new Virginia Railway Express commuter lines connecting Washington with Fredericksburg, Va., to the south, and Manassas, Va., to the west.

Trailer Train: Placed an order with the Freight Car Division of Bethlehem Steel for 230 all-purpose articulated flatcars (1,150 platforms), capable of carrying both containers and trailers. Work on the order begins in July and will take three months to complete. With completion of this order, Trailer Train will have 700 of the 265-foot cars.

Facilities

Wisconsin Central: Began work on a $3.2-million project to upgrade nearly 46 miles of line between Manitowoc and Menasha, Wis., with completion scheduled for late November.

Capital Expenditures

BC Rail: A 1990 capital improvement program budgeted at $121 million (Canadian) includes purchase of 22 new Dash-8 locomotives from General Electric, at a cost of $46 million, to replace 29 older 3,000-hp units. Delivery was to be completed in May. Approximately $42 million is earmarked for major track and roadway projects. Other planned outlays include $4.2 million for continuing microwave system improvements between North Vancouver and Prince George; and $2.3 million for new vehicles of various kinds.

Revenue freight carloadings

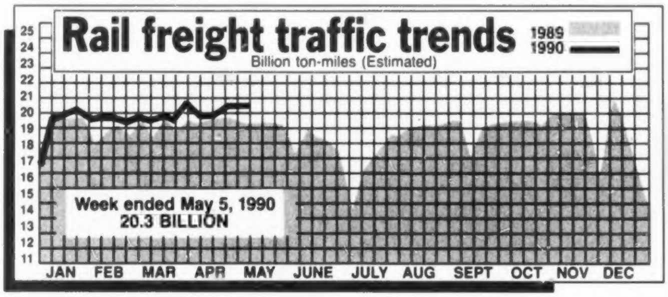
Commodity	May 5 week	Apr. 28 week	Apr. 21 week	Apr. 14 week
Grain	27,271	26,196	29,685	27,031
Other farm products	1,132	1,243	1,164	1,666
Metallic ores	19,428	18,084	17,636	18,537
Coal	130,829	130,072	131,672	136,616
Crushed stone, gravel and sand	16,850	16,438	15,678	13,979
Nonmetallic minerals	10,800	10,045	9,834	9,545
Grain mill products	9,832	10,055	9,772	9,754
Food and kindred products	8,617	8,661	8,429	8,211
Primary forest products	9,401	10,469	10,319	9,799
Lumber and wood products	6,904	7,337	6,813	6,743
Pulp, paper and allied products	10,725	10,981	10,450	10,595
Chemicals and allied products	28,993	30,741	31,622	28,289
Petroleum products	5,072	5,121	5,345	4,668
Stone, clay and glass products	10,478	10,266	10,477	9,786
Coke	5,807	5,984	6,240	5,902
Metals and products	10,489	10,250	9,978	8,880
Motor vehicles and equipment	19,572	20,404	16,988	15,952
Waste and scrap materials	8,787	9,082	8,992	8,571
All other carloads	6,903	7,157	6,457	6,000
Total Cars Loaded	**347,890**	**348,586**	**347,551**	**340,524**
% change from previous year	0	(2.0)	(2.6)	4.4
Estimated revenue ton-miles (billions)	20.3	20.3	20.3	19.8
% change from previous year	2.0	.5	(.5)	(2.0)

Total:	**1990**	**1989**	**% change**
18 weeks	6,095,833	6,080,610	.3

Intermodal traffic

	May 5	Apr. 28	Apr. 21	Apr. 14
Trailers	66,301	67,422	61,680	63,563
Containers	53,014	52,081	48,987	49,075
Total	**119,315**	**119,503**	**110,667**	**112,638**
% change from previous year	5.4	3.6	(2.6)	(1.6)

		% change
Cumulative total: 18 weeks	2,097,694	3.3



Source: Association of American Railroads

Monongahela: Placed an order with Digital Concepts, Inc., for a Digital Traffic Control system to control 163 route miles. Using a mouse as a pointing device, and a graphic depiction of the track on high resolution color CRTs, the dispatcher will select authority limits for block clearances. The system then automatically translates his selected limits into the block clearance text, also appending the clearance number, time, date, dispatcher's identification number, etc. Clearances are presented to the dispatcher in a pop-up box for issuance. Once issued, the graphics screens are updated to show the authorized limits for each train.

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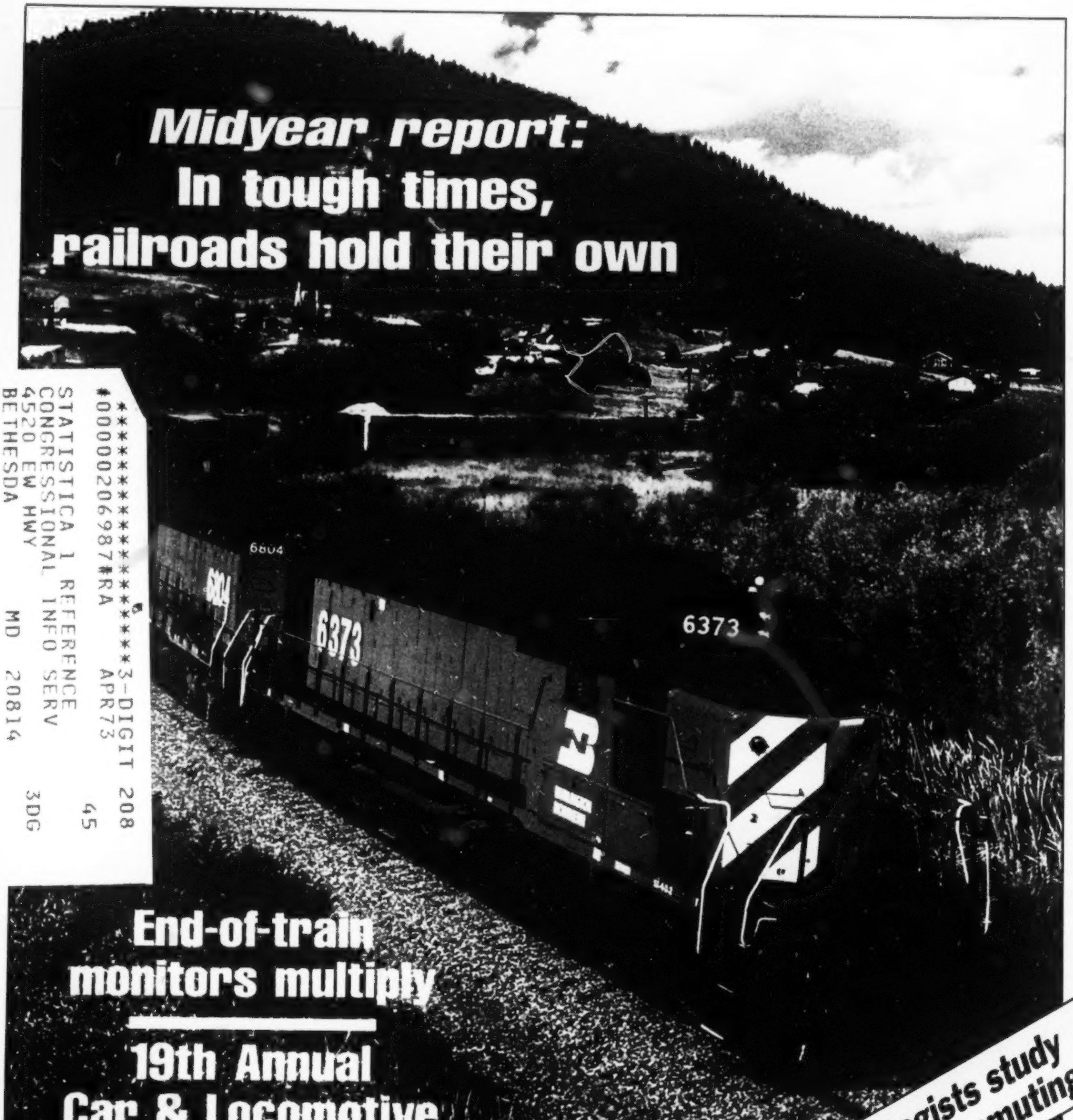

Midyear report: In tough times, railroads hold their own

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End-of-train monitors multiply

19th Annual Car & Locomotive Repair Directory

SEPTA strategists study cross-county commuting

July 1990

Railway Age

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32 1990 Car & Locomotive Repair Directory

Railway Age's 19th annual directory is a cross-indexed guide to repair facilities in the U.S. and Canada, listing services offered by each.

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27 Midyear report: Railroads hold their own

While the national economy struggles to avoid recession, railroads are doing surprisingly well. But cost-control and competitive problems cloud the future.

75 Canada goes cabooseless

Replacing cabooses with end-of-train monitoring devices is an old and successful story in the U.S. but a relatively new one in Canada. CP and CN have, however, played fast catch-up.

78 How BN manages m/w

A still evolving, computer-based system helps BN plan, cost, program, and monitor engineering/maintenance projects.

82 SEPTA studies cross-county line

As reverse commuting grows, so does suburb-to-suburb travel. Is a new line bypassing Philadelphia one answer?

85 New York MTA's $54 billion plan

That's what it will take over the next 20 years, says NYMTA, to maintain the present system and build for expansion.

86 California votes $3 billion for rail

A reversal on tax increases made national headlines, but rail transit was the real victor at the polls.

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22 North Western wins Dow safety award
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25 Europe builds new airport rail links

Cover: Photo by Scott Snell

Car and Locomotive Repair Directory Cover: Photos by Bruce Harmon.

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Facilities

Southern California Rapid Transit District: Awarded a $32 million contract to Morrison Knudsen to perform finishing work on two Los Angeles subway stations. MK will install granite, stainless steel and porcelain-enamel wall and ceiling panels in the underground stations, as well as mechanical and electrical systems.

London Regional Transport: Awarded a $50 million (Canadian) contract to Alcatel Canada's SEL Division to resignal the fully automatic Docklands Railway using SELTRAC technology, which is now in use in Vancouver, Toronto, and Detroit. The transmission based moving block signaling system will allow a substantial increase in capacity and on-line management of a junction merging four branches of the railway. Headways of two minutes or less will be provided on the most heavily traveled sections of the line.

Metropolitan Transportation District of Oregon: Received a $2.5 million grant from the Urban Mass Transportation Administration to help pay for a light rail station at the new Oregon Convention Center in Portland.

Chicago Transit Authority: Will seek bids in July and August for capital projects costing an estimated $90 million. De Leuw, Cather & Co. is performing general engineering consulting services for these projects. Included are: installing cwr, contact rail, some new ties, and special trackwork on 9.2 miles in the State Street Subway; replacing 7.2 track miles of timber walkway with fiberglass/timber on the elevated track structure of the North Main and Ravenswood lines; installing 14.5 miles of cwr, replacing contact rail, renewing ties and ballast, and installing special trackwork on the Skokie, Ravenswood and Douglas lines; and reconstituting some 780 column foundations on elevated structures on the Lake Street and South Main lines.

GO Transit: Has entered into an arrangement with Canadian National for a three-year, $50 million (Canadian) project to extend GO's commuter train service between Oakville and Burlington, Ont. The project includes construction of a new stretch of main line.

Revenue freight carloadings

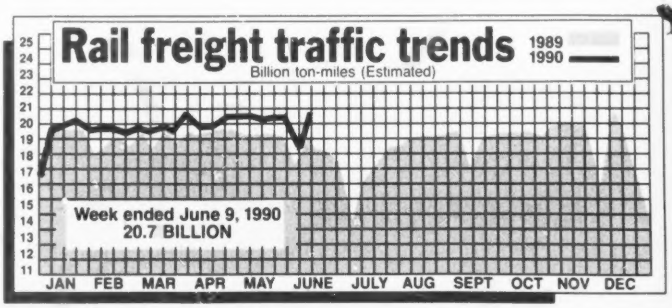
Commodity	June 9 week	June 2 week	May 26 week	May 19 week	May 12 week
Grain	27,590	22,161	27,127	26,798	25,518
Other farm products	2,105	1,916	1,862	1,888	1,573
Metallic ores	19,369	20,120	19,868	21,062	19,717
Coal	135,140	121,423	130,041	130,012	130,950
Crushed stone, gravel and sand	18,168	15,551	17,321	17,213	17,644
Nonmetallic minerals	9,820	10,050	11,292	10,306	10,699
Grain mill products	9,894	9,456	10,282	9,783	9,625
Food and kindred products	8,524	7,625	8,778	8,667	8,499
Primary forest products	10,041	8,650	9,697	9,590	9,571
Lumber and wood products	6,330	6,127	6,685	6,748	6,500
Pulp, paper and allied products	10,602	10,952	10,755	10,953	9,890
Chemicals and allied products	27,894	25,550	27,896	27,662	28,640
Petroleum products	5,111	4,480	5,222	5,154	5,213
Stone, clay and glass products	10,566	8,830	10,368	10,763	10,249
Coke	5,968	5,391	5,699	6,016	5,980
Metals and products	9,618	10,666	9,997	10,141	9,639
Motor vehicles and equipment	20,750	17,166	20,127	20,944	20,894
Waste and scrap materials	9,021	7,667	9,135	9,059	9,315
All other carloads	6,805	6,035	6,725	7,063	6,179
Total Cars Loaded	**353,316**	**319,816**	**348,877**	**349,822**	**346,295**
% change from previous year	1.6	.1	0	(.3)	0
Estimated revenue ton-miles (billions)	20.7	18.7	20.4	20.3	20.1
% change from previous year (subject to revision)	4.5	3.3	2.5	1.5	1.0

Total:	1990	1989	% change
23 weeks	7,812,827	7,793,812	.2

Intermodal traffic

	June 9	June 2	May 26	May 19	May 12
Trailers	66,359	50,627	67,343	65,755	64,900
Containers	53,168	50,659	51,307	50,345	53,658
Total	**119,527**	**101,286**	**118,650**	**116,100**	**118,558**
% change from previous year	6.2	1.1	5.3	.7	5.2

		% change
Cumulative total: 23 weeks	2,671,062	3.4

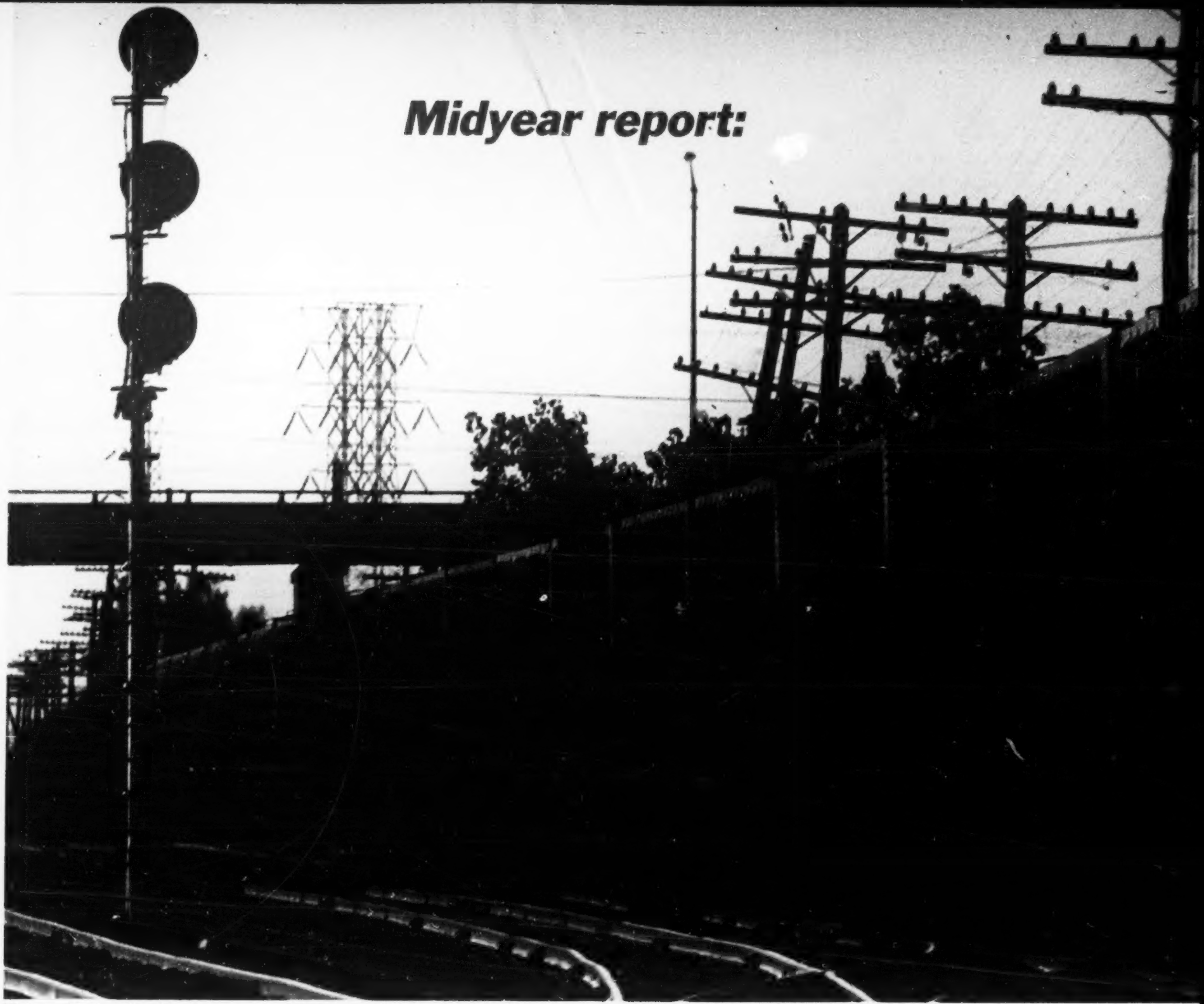


Source: Association of American Railroads

Equipment

Canadian National: Will rebuild and upgrade 45 diesel-electric units at its Pointe St. Charles Shops at a cost of $37 million (Canadian). CN will also invest $17 million in the acquisition of 170 fully enclosed automobile transporters, with platforms supplied by Lavalin and enclosed racks fitted by Thrall. Other projects approved by CN directors at a June 12 board meeting: $1.4 million to extend a freight car maintenance, administration and billing computer system to facilities in Moncton, Montreal, Hamilton, and Sarnia; and $750,000 for a voice radio system that will permit employees in the field to report directly to the St. Lawrence Customer Service Centre.

Midyear report:



Unit coal trains like this one were mainly responsible for the 4.5% increase in revenue ton-miles in this year's first quarter. Photo: Larry Smith Prototype Pix

Railroads hold their own

In a slow-to-no growth economy, both ton-miles and earnings are up. But the industry continues to grapple with problems internal and external that leave no room for complacency.

By LUTHER S. MILLER,
Editor

Asked recently how he would characterize the railroad industry's first-half 1990 performance, economist Peter Toja replied: "Six months ago I would have said we viewed the immediate future with extreme caution. Today I'd say we're looking ahead with guarded optimism."

That's another way of saying that while 1990 may not turn out to be the best of times for railroads, it certainly won't be the worst.

Six months ago there was good reason for caution—even pessimism. A flat year for traffic was in prospect. Capital spending budgets were down. The freight-car market was softening. What optimism you could find was confined to expressions of hope that the downturn would be short-lived.

But the first half turned out to be a little better than expected. And barring the unexpected, more encouraging news may be in store for the rest of the year.

Traffic has been up beyond expectations—in ton-miles, if not in carloadings. Another record traffic year is in prospect, with ton-miles expected to exceed one trillion for the third year in a row. The freight-car market, a traditional barometer for industry forecasters, is beginning to warm up after a cooling off earlier this year.

This was the picture at midyear:

Traffic.—Revised figures made public June 21 by the Association of American Railroads put first-quarter ton-miles at 260 million, up 4.5% from the 249 million recorded for first-quarter 1989. This was a sharp upward revision of earlier estimates which had put the ton-mile increase at less than 2%. What happened was this: While

Railroad traffic: A five-year forecast
(Thousands)

	1989	1990	1991	1992	1993	1994
Commodity carloadings	17,260	17,224	17,725	18,313	18,926	19,458
Trailers & containers	5,949	5,950	6,140	6,425	6,725	7,000

Source: ECAP

Economic Consulting and Planning, Inc. (ECAP) is forecasting traffic increases in the neighborhood of 3% a year, a growth rate that could trigger increased freight car and locomotive orders.

carloadings as a whole were nearly flat, as predicted, there was an increase in coal loadings; coal is a heavy commodity which tends to move long distances; and since ton-miles are based on weight and distance, traffic by that measure was up more than originally estimated. That was the up-side of the traffic picture. The down-side was a decline in some higher-rated commodities which produce fewer ton-miles but earn higher revenues.

Earnings.—Class I roads reported net railway operating income of $596 million in the first quarter, up 31% from last year's $454 million. This gave the railroads a rate of return on investment of 5.97% for the 12 months ending March 31, 1990, compared with a return of 5.15% for the year-earlier period.

Some caveats are in order: These figures exclude a one-time charge of $342 million taken by the Santa Fe for an out-of-court settlement of a law suit involving alleged antitrust violations in connection with the Energy Transportation Systems' proposed coal-slurry pipeline.

It must be borne in mind, too, that this year's income figures look better than last year's partly because last year's figures reflected a number of write-offs in connection with employee reduction programs.

But even when all of these things are taken into consideration, this year's financial performance still looks strong in comparison with last year's.

First-quarter operating revenues totaled $7.1 billion, up 1.8% from the 1989 quarter despite the fact that revenue per ton-mile dropped about 3%. Operating expenses were $6.226 billion, virtually unchanged from last year's $6.231 billion—a reflection, said AAR President William H. Dempsey, of "the ability of railroads to control expenses in a period of traffic growth and the pressures of inflation." Revenue per ton-mile declined from 2.71 cents in the 1989 quarter to 2.64 cents this year.

A final report on first-half traffic and earnings won't be available for several more weeks, when all second-quarter figures are in. But as of last month, first-quarter traffic trends appeared to have carried over into the second quarter.

During the week ended June 9, for example, total carloadings were up 1.6% from the corresponding 1989 week but ton-miles were 4.5% on the plus side (an estimate subject to revision, probably upward, when final reports are in). Coal loadings that week were up 3.9% from the corresponding week a year earlier; and chemical loadings were up 7.6%. Other commodity groups showing gains from the same week last year were grain, up 1.3%; other farm products, +1.3%; crushed stone, gravel and sand, +6.4%; pulp, paper and allied products, +1.0%; coke, +13.2%; metals and products, 3.2%; motor vehicles and equipment, +2.9% (an increase reflecting last year's trough); and waste and scrap, +1.5%. Down from last year were carloadings of metallic ores, −10.2%; non-metallic ores, −7.1%; grain mill products, −1.9%; primary forest products, −3.2%; lumber and wood products, −10.1%; and stone, clay and glass products, −2.8%.

Intermodal traffic in the week ended June 9 added up to 119,527 trailers and containers, an increase of 6.2% from the corresponding week last year. The gradual switch of traffic to containers was reflected in the fact that container loads rose by 14.9% to 53,168 while trailer loads rose only 0.2% to 66,359.

Freight cars.—Late in 1989, the carbuilders were looking to deliveries of about 30,000 cars in 1990. At about that time demand began to soften, and some forecasts were revised as low as 25,000 cars. Now, says Peter Toja, executive vice president of Economic Consulting and Planning, Inc., "things seem to be picking up again." Toja says carbuilders have recently been experiencing a marked increase in inquiries following a lull that saw orders decline for much of the first half of this year. He foresees production of 28,000 to 29,000 new cars this year, very close to earlier forecasts. He says present backlogs will carry most builders through most or all of this year, and an expected pickup of orders in the second half should give builders a good year-end backlog.

- **Builders optimistic.** Comments from individual carbuilders are generally in line with Toja's forecast. William G. Brader, president of Bethlehem Steel's Freight Car Division, foresees orders remaining "fairly healthy well into the fall for both the new car construction and railroad car repair and rebuilding businesses." William A. Furman, president of The Greenbrier Companies, says Gunderson's present backlog of orders will keep its lines busy through the rest of this year. He has seen some softening of the market but foresees a strong demand for intermodal cars over the long term with containers continuing to gain market share from trailers.

In this year's first quarter, 9,200 new and rebuilt cars were placed in service, compared with 7,286 during the corresponding 1989 period. But new car orders dropped—from 11,040 in last year's first quarter to 5,864 this year. The April 1 backlog of cars on order but undelivered was 13,537, down from 19,707 a year earlier.

Locomotive production this year has declined. The AAR says 116 new and rebuilt locomotives were delivered in the first quarter, compared with 157 in the same quarter last year. The 70 locomotives backlogged on April 1 represented less than half of the year-earlier backlog of 148.

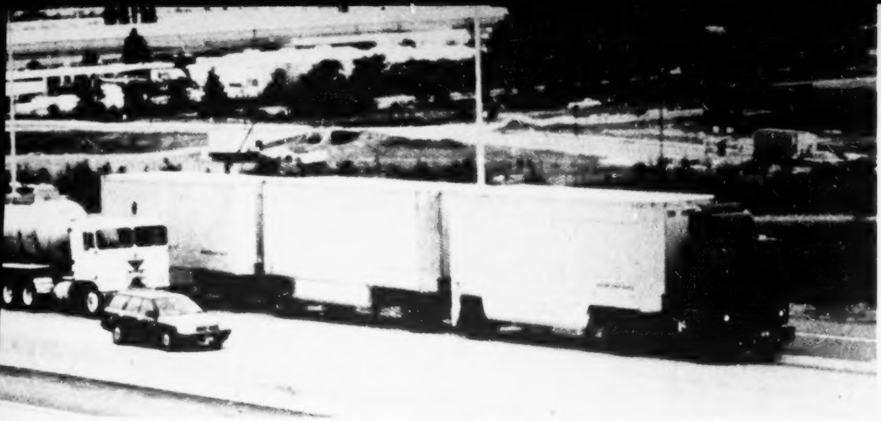
Despite blips like these, the long-term outlook for new rolling stock is for steady, year-to-year increases.

Car orders will never again reach the 80,000-a-year levels of a decade ago. One reason is that freight cars today are working far harder than they did a few years ago. In 1989, for example, the average freight car made 19.8 trips, compared with 15.8 trips in 1980—a 20% improvement.

But Richard E. Briggs, executive vice president of the AAR, notes that "we have finally worked the surplus off, and if we can get some growth equipment orders will go up. I suspect that as we get back to 3-4% growth, we'll see freight car production rising to 45,000-to-50,000, and locomotive production in excess of 1,000."

Clark Wood, vice president and director of railcar sales for Trinity Industries, agrees that a return to a 45,000-car year is possible "if we see the economy get back to a 3%-plus increase each year."

Wood and others point out that one big unresolved question with respect to grain cars is, who is going to buy them? Purchase of these cars by shippers was discouraged



This triple 28-foot combination was photographed in Oregon, one of 13 states where such combos are now permitted. They could go nationwide, along with twin-48s, if truckers have their way.

Photo: Bruce Harmon

by an ICC ruling that railroads are required to use shipper-owned cars only as a last resort.

"That has got to hurt, and it could drive some shippers to a different form of transportation," says the head of one equipment financing company. One story making the rounds last month was to the effect that a grain shipper, rather than purchase railcars that might lie idle much of the time, has instead opted to purchase a small fleet of barges.

- **The next ten years.** The AAR's Dick Briggs, who played a key role in the events that led up to the passage of the Staggers Rail Act of 1980, recently reflected on the changes that the Staggers Act had triggered during the '80s; and he speculated on what the '90s might hold for the railroads.

"The railroads adapted fast after Staggers," recalled Briggs. "We saw productivity gains, improvements in service, tailoring of service to customer demands—in all, a massive restructuring, breathing life into a moribund system.

"We are not going to be able to replicate, in the '90s, the kind of gains that we made in the '80s.

"Meanwhile, we're going to see modestly lower rates in the growth of the economy than we saw in the last ten years."

With slow-to-no growth in the economy, how can railroads increase their traffic?

Says Briggs: "One way is to raise rates. On the plus side, we are not going to see the downward pressure on rates that we saw in the '80s. That's not to say there will be lots of opportunity to raise rates. But we're not going to see the kind of pressure that literally drove rates down in real terms 33% in the '80s. That's in part because the trucking industry is reaching diminishing returns like we are, and in part because they're down to a margin where they cannot cut much more before going out of business.

"Another way is to reduce the number of physical units you employ to produce service. We still have some opportunities out there but we're not going to see the kind of astounding productivity increases we saw in the '80s.

"Still another way is reducing unit prices. Our biggest cost is still labor. It has shrunk but it's still four times bigger than anything else. That's going to be the key to increasing profit margins—how well we do in driving down unit prices, partly through new union agreements and perhaps changes in our health and welfare systems. Labor costs now represent about 41% of expenses."

- **Legislative issues.** The railroads don't expect to solve all of their labor issues at the bargaining table. Two of the thorniest may have to be decided in Congress.

On involves the Federal Employers' Liability Act (FELA), which is costing the railroads an estimated $1 billion a year. The AAR says that adds 70 cents to the price of each ton of freight that moves by rail.

Another is the long-term solvency of the Railroad Retirement System, which is now before a Congressional commission. A report is due later this year on the current and projected financial condition of the system. Railroads have taken no official position on proposed replacement of Railroad Retirement with Social Security. But they're urging reform of the system, particularly its early retirement and occupational disability provisions, which they claim represent a burden on the industry and its shippers of more than $500 million a year.

- **The big-truck threat.** Of more immediate concern to the railroads is the growing possibility that their highway competition may soon take the form of twin-48 foot or triple 28-foot trailer rigs. If motor carriers are confronted with the prospect of higher user charges when the highway reauthoriziation bill comes up next year, they're expected to demand a quid pro quo in the form of longer and heavier trucks. The trucking lobby is working at the state level to achieve the same goal; many states have "grandfather" rights to increase lengths and weights without federal approval.

"If such monster truck-trains become the national standard," says the AAR's Briggs, "railroads will find themselves shut out from serving just about every growth element in the economy, and the nation can forget about railroads providing much help in solving the country's environmental and energy problems." Briggs adds that while motor carriers claim that bigger, heavier trucks will increase their productivity up to 37%, "these gains will be eviscerated by the societal costs of increased highway congestion, highway maintenance, energy consumption, pollution, and public safety."

Just what will happen to railroads if these "truck-trains" are permitted on the highways?

"The biggest initial damage," says Briggs, "is that it pares your profit margins. If someone else's costs go down relative to yours, the first thing you do is reduce your rates, until you get to the point where you don't make any money. So the most pernicious damage goes right to the bottom line.

"We asked a computer model what would happen if the whole country was open to twin-48s and triple-28s, and the answer was that we would lose 9% of our traffic. While that sounds bad, it's not enough to cause you to jump out of the window—until you also realize that you've lost 52% of your pre-tax profits. And that could be the end of the ball game."

It's not an eventuality that Briggs really expects to come about without a fight. He believes Americans have too great a sense of self-preservation to consent to sharing their highways with the monster truck rigs: "People don't like to drive with those suckers. They wouldn't want to drive on railroad tracks alongside trains. People are scared of big trucks.

"The argument about whether society is better off depends not only on the relative safety of big vs. smaller trucks but also how much traffic goes off the railroads and how many people will be killed because of it. It's quite clear that if you move traffic from rail to truck, more people get killed, no matter how good the drivers are. It's also clear that you're going to use a lot more fuel, and you'll have a lot more pollution, and you're going to add congestion."

So the future of railroading, short- and long-term, depends not only on how well the railroads do their job, but also on how well the nation's lawmakers and transportation planners do theirs.

The smart forecaster today would seem to be one who keeps one eye on carloadings—and another on Congress. ■

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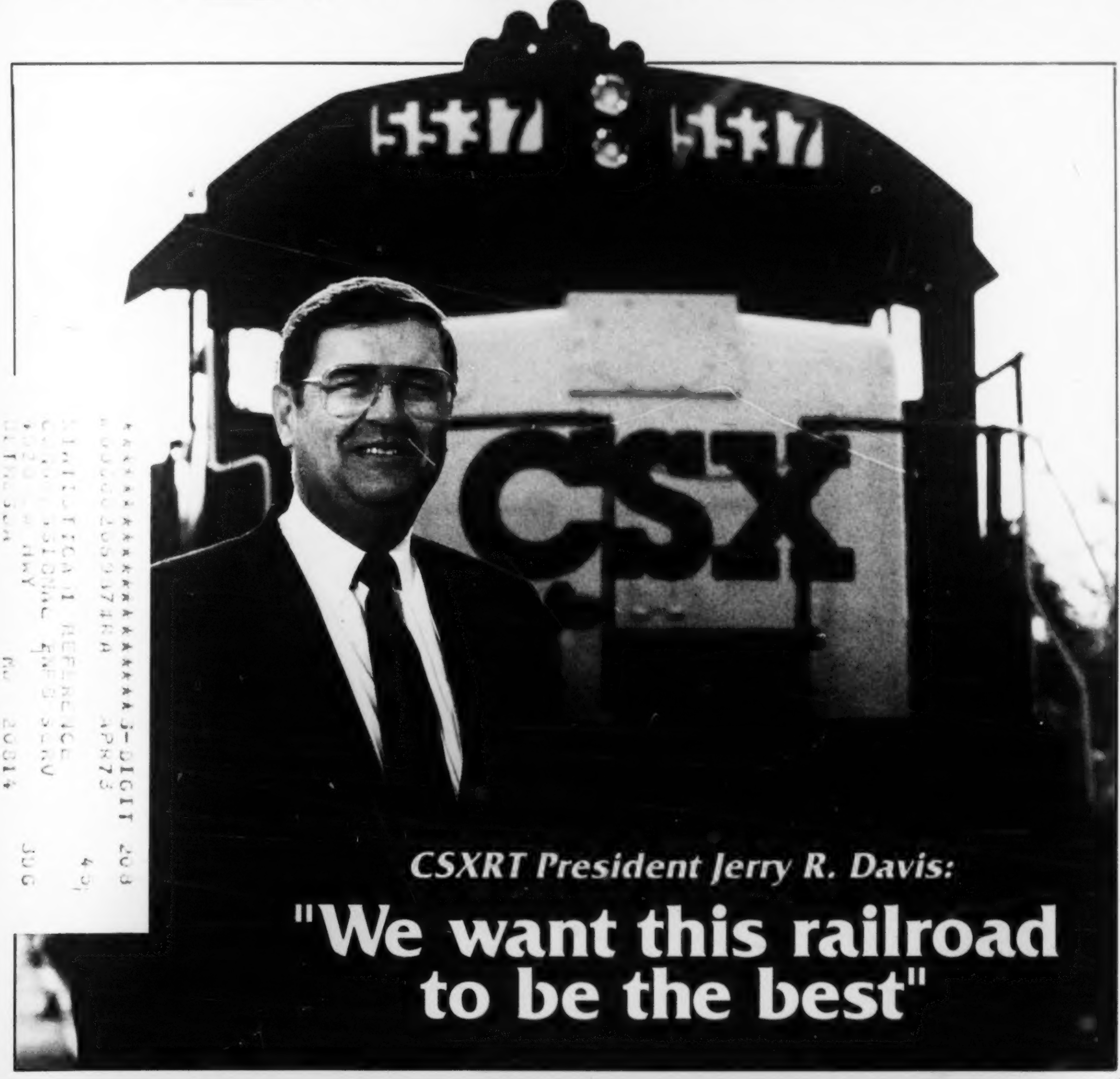
August 1990

Railway Age

...for the new age of railways and rail transit



CSXRT President Jerry R. Davis:

"We want this railroad to be the best"

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Special Report

Railroads in 1990: After 10 years of progress, danger lies ahead

What makes St. Louis light rail different

August 1990

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CSX Rail Transport's president has been on the job for only about a year, but he's moved fast to formulate a strategy for improving performance, with particular attention to greater locomotive reliability.

45 For Metro-North, 60-mph turnouts

At Scarsdale, N.Y., M-N has installed its first tangential geometry turnouts specifically designed for high density, high speed passenger operations; more are coming.

50 What's different about St. Louis light rail

By using ready-made infrastructure and sticking to a no-frills design, builders of Metro-Link are holding costs down to about $16.5 million per double track mile.

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The Staggers years: Back from the brink......p. 30

The railroads have come a long way from the days not so long ago when one in every five miles of track was operated under the gavel of bankruptcy courts. But the comeback journey isn't over.

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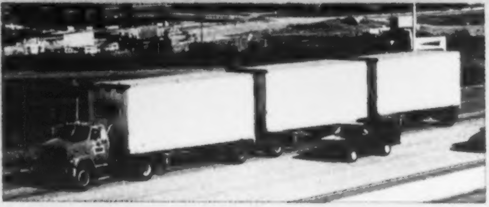
CONRAIL

The myth of the monster trucks...p. 35

If truckers succeed in putting veritable trains of trucks on public roads across the land, the effects could be calamitous—on highway safety, on the environment, on the railroads.



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Equipment

CSX Transportation: Awarded a contract to Morrison Knudsen for the remanufacture of 50 road slug locomotives at MK's Mountaintop, Pa., shops. Work is to be completed by the end of this year. Meanwhile, work is underway at MK's Boise, Ida., industrial complex on the remanufacture of 50 CSX locomotives under a contract awarded earlier.

CSX Transportation: Ordered two four-axle, 38-foot, 55-ton scale-test cars from Itel Rail for delivery in the fourth quarter. The CSXT order is the first to be received by Itel for new cars to be built at NewCastle, Pa., since it acquired the facility from Miner Railcar Services. The shop is undergoing a $1-million expansion program, which will increase its maintenance/repair capacity from 500 to 900 cars per year; the plant also has capability to build up to 50 new specialty cars annually.

Itel Rail: Placed an order with Trinity Industries for 1,000 new covered hopper cars for delivery through the first quarter of 1991. Half will be of 4,750-cubic-foot capacity and half of 3,000-cubic-foot capacity. Trinity will build the cars at Greenville, Pa., and Bessemer, Ala.

Southern Pacific: Will rebuild 49 diesel locomotive engines and the power assemblies for another 100 locomotives at its Sacramento Locomotive Works, a program that will extend through the remainder of 1990. SP last month recalled 122 furloughed workers in connection with the rebuilding project.

Facilities

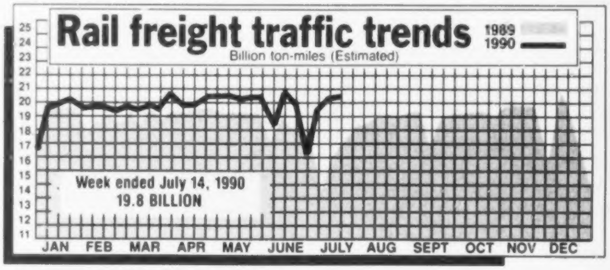
Conrail: Invested $14.8 million in the rebuilding of its automotive transloading facility in Ridgefield Heights, N.J., which supports General Motors' distribution needs in the New York/New Jersey metropolitan area.

Los Angeles County Transportation Commission: Awarded a contract to STV/Seelye Stevenson Value & Knecht to study the feasibility of operating rail commuter service into the Los Angeles Union Passenger Terminal along routes from Ventura County, Santa Clarita, San Bernardino County, Riverside County, and Orange County.

Revenue freight carloadings

Commodity	July 14 week	July 7 week	June 30 week	June 23 week	June 16 week
Grain	27,564	22,968	29,370	26,543	28,278
Other farm products	1,262	1,491	1,954	1,906	2,076
Metallic ores	22,919	21,963	19,102	19,994	21,049
Coal	120,711	88,949	114,380	128,145	132,345
Crushed stone, gravel and sand	16,758	15,269	17,731	17,447	17,118
Nonmetallic minerals	9,133	8,208	9,209	9,941	9,087
Grain mill products	9,906	9,189	10,120	9,715	9,870
Food and kindred products	8,691	7,450	8,402	8,269	8,640
Primary forest products	10,350	7,345	10,284	10,011	10,081
Lumber and wood products	5,619	4,415	7,095	6,673	6,589
Pulp, paper and allied products	10,798	10,441	11,036	10,630	10,328
Chemicals and allied products	26,819	25,441	28,487	27,455	27,244
Petroleum products	5,465	4,538	5,123	4,760	5,375
Stone, clay and glass products	10,529	8,881	10,031	10,414	10,359
Coke	5,544	5,108	5,415	5,630	5,866
Metals and products	9,435	9,129	9,908	9,720	9,781
Motor vehicles and equipment	12,112	11,168	19,764	21,847	21,042
Waste and scrap materials	8,283	6,268	8,713	8,934	8,961
All other carloads	6,324	5,480	6,622	7,043	6,210
Total Cars Loaded	**328,222**	**273,701**	**332,746**	**345,077**	**350,299**
% change from previous year	8.2	10.6	4.2	4.1	3.5
Estimated revenue ton-miles (billions)	19.8	16.4	19.6	20.3	20.4
% change from previous year	13.1	14.7	7.7	8.0	6.8

Total:	**1990**	**1989**	**% change**
28 weeks	9,442,173	9,333,768	1.2



Source: Association of American Railroads

Intermodal traffic

	July 14	July 7	June 30	June 23	June 16
Trailers	60,086	55,082	70,865	65,839	65,613
Containers	52,447	42,619	52,238	53,374	53,553
Total	**112,533**	**97,701**	**123,103**	**119,213**	**119,166**
% change from previous year	1.7	10.1	4.0	3.8	5.1

		% change
Cumulative total: 28 weeks	3,244,797	3.7

Freight cars

	DELIVERED		ORDERED		ON ORDER AND UNDELIVERED	
	2nd quarter 1990	2nd quarter 1989	2nd quarter 1990	2nd quarter 1989	July 1 1990	July 1 1989
Built new by carbuilders	7,971	7,838	10,990	5,649	16,556	16,398
Built new in RR shops	0	0	0	0	0	0
Built new—Total	7,971	7,838	10,990	5,649	16,556	16,398
Rebuilt	2,609	0	3,045	0	0	0
TOTAL	**10,580**	**7,838**	**14,035**	**5,649**	**16,556**	**16,398**
Locomotives (new and rebuilt)	131	213	N/A	N/A	133	146

Source: Transportation Division, AAR and American Railway Car Institute

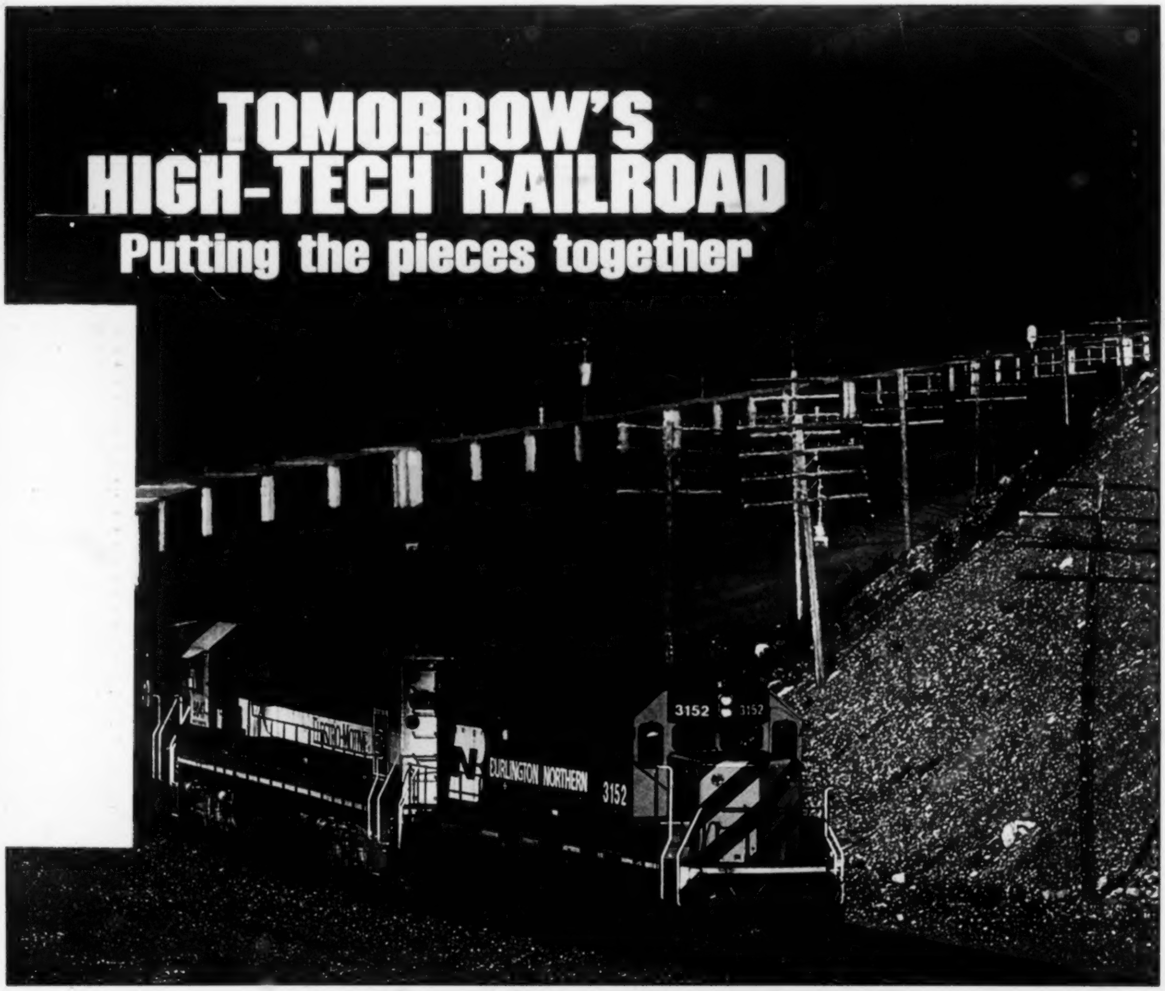
September 1990

Railway Age

...for the new age of railways and rail transit

TOMORROW'S HIGH-TECH RAILROAD

Putting the pieces together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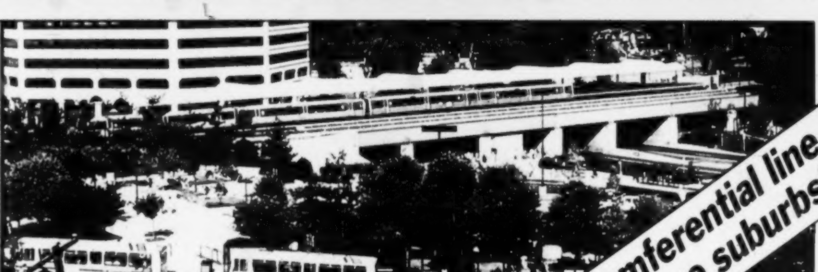
Rail transit's quest for quality suppliers



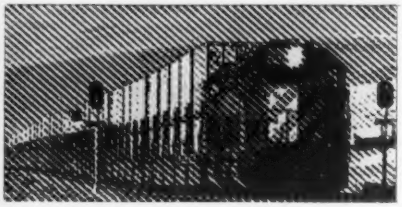
A circumferential line for Chicago suburbs?

September 1990

Railway Age

...for the new age of railways and rail transit

HIGH-TECH RAILROADING



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Formidable obstacles sometimes clutter the route to efficient operation. The problems include, but go far beyond, getting quality products at good prices.

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At a recent California conference on emerging commuter rail systems, new activity was reported all over the country, sometimes in surprising places.

91 Will Metra follow Sears?

Chicago has long studied a circumferential rail system. The move of thousands of Sears employees outside the city could hasten the day.

99 Itel markets a mixed fleet

It's a highly diversified fleet, no longer dominated by boxcars, and Itel is implementing a diversified marketing program to keep the cars busy.

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Equipment

Burlington Northern: Will lease 1,200 new 48-foot domestic containers from Itel Containers International. Stoughton Trailer will build 900 and Monon Inc., 300. Delivery will be completed this fall.

Canadian National: A $40 million (Canadian) investment program announced Aug. 10 includes $33.1 million for purchase and overhaul of 683 covered hopper cars which CN has been leasing from General Electric Railcar Services and Leasing Canada; $1.5 million to install fixed bulkheads on 197 100-ton flat cars for handling Alcan aluminum sheet ingots; and $732,000 to install an acoustic abnormal-bearing detector on the Edson subdivision at Stony Plain, Alta. CN has also announced that it will acquire 500 48-foot aluminum containers and 440 chassis from Monon at a total cost of $15 million. CN will use the equipment to launch Canada's first double-stack container service for domestic traffic, in the Moncton-Montreal-Toronto corridor. Delivery is to be completed in December. CN is working on a $2 million project to obtain necessary clearances between Moncton and Toronto to handle two stacked 9-foot, 6-inch containers.

Northwestern Oklahoma Railroad: Contracted with Chicago & North Western for the rebuilding of 174 boxcars at C&NW's Clinton, Iowa, shops. The program, to be completed in November, will include installation of new end interior linings, repair and caulking of floors, sandblasting, painting and stenciling.

USSR/Finland: San Francisco-based Transcisco Industries announced that SOVFINAMTRANS is leasing 830 additional Uni-Temp equipped tank cars, bringing its total fleet to more than 1,300 units. SOVFINAMTRANS is a joint venture of the Ministry of Rail and Petro Chemicals of the USSR, HAKA Corp. of Finland, and Transcisco Trading Co. Transcisco will supply the Uni-Temp heating systems for installation on existing tank cars in the USSR and Finland. Transcisco Industries Chairman Mark C. Hungerford said the joint venture anticipates adding still more tank cars to its lease fleet, the only such fleet operating in the Soviet Union.

Metro-North: Awarded a $91 million contract to Morrison Knudsen for the supply of 39 commuter cars, which MK will build at its Hornell, N.Y., complex. Construction will begin in 1991 and is to be completed early in 1993. The contract includes an option for an additional nine to 18 cars and provides for up to $2.1 million for spare parts. This is MK's second order for new rail cars. MK is now in the engineering stage on a $208 million contract to build 256 new cars for the Chicago Transit Authority.

Metra: Chicago's commuter railroad system has been authorized to acquire, through the competitive negotiation process, 173 new cab cars and 158 new trailer cars, all with disabled person facilities; 140 refurbished Highliner cars; and 20 new M-U units. The first RFP is to go out this month.

Revenue freight carloadings

Commodity	Aug. 11 week	Aug. 4 week	July 28 week	July 21 week
Grain	26,333	26,462	25,376	26,526
Other farm products	830	896	1,066	1,202
Metallic ores	15,168	21,575	25,896	26,343
Coal	130,373	128,787	132,280	132,052
Crushed stone, gravel and sand	17,965	16,812	16,813	17,346
Nonmetallic minerals	10,657	9,486	9,371	9,709
Grain mill products	9,962	9,778	9,896	9,918
Food and kindred products	8,423	8,829	8,568	8,608
Primary forest products	10,033	10,041	9,996	10,207
Lumber and wood products	5,956	6,227	6,306	6,367
Pulp, paper and allied products	10,273	10,605	10,421	10,399
Chemicals and allied products	27,520	27,888	26,186	27,634
Petroleum products	5,476	5,054	5,431	5,585
Stone, clay and glass products	10,385	10,240	10,424	10,119
Coke	5,842	5,787	5,851	5,691
Metals and products	9,633	9,977	9,884	9,645
Motor vehicles and equipment	15,732	14,769	15,777	15,169
Waste and scrap materials	8,841	8,479	8,610	8,447
All other carloads	6,508	6,192	6,716	6,329
Total Cars Loaded	**335,910**	**337,884**	**344,868**	**347,298**
% change from previous year	(1.9)	2.7	7.8	3.9

		% change
Cumulative total: 32 weeks	10,797,264	1.4

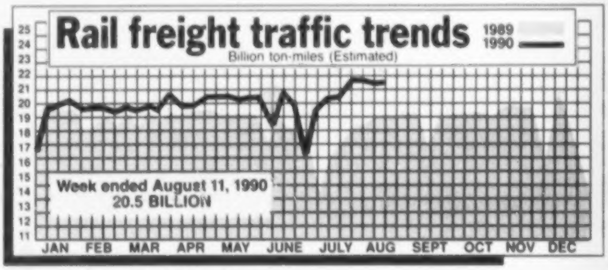
	Aug. 11 week	Aug. 4 week	July 28 week	July 21 week
Estimated revenue ton-miles (billions)	20.5	20.4	20.7	20.7
% change from previous year	2.0	4.6	5.6	10.7

Total:	**1990**	**1989**	**% change**
32 weeks	639.8	613.4	4.3

Intermodal traffic

	Aug. 11	Aug. 4	July 28	July 21
Trailers	61,361	65,637	65,424	66,080
Containers	55,860	57,400	57,507	52,639
Total	**117,221**	**123,037**	**122,931**	**118,719**
% change from previous year	2.6	6.6	3.8	4.7

		% change
Cumulative total: 32 weeks	3,726,933	3.8



Source: Association of American Railroads

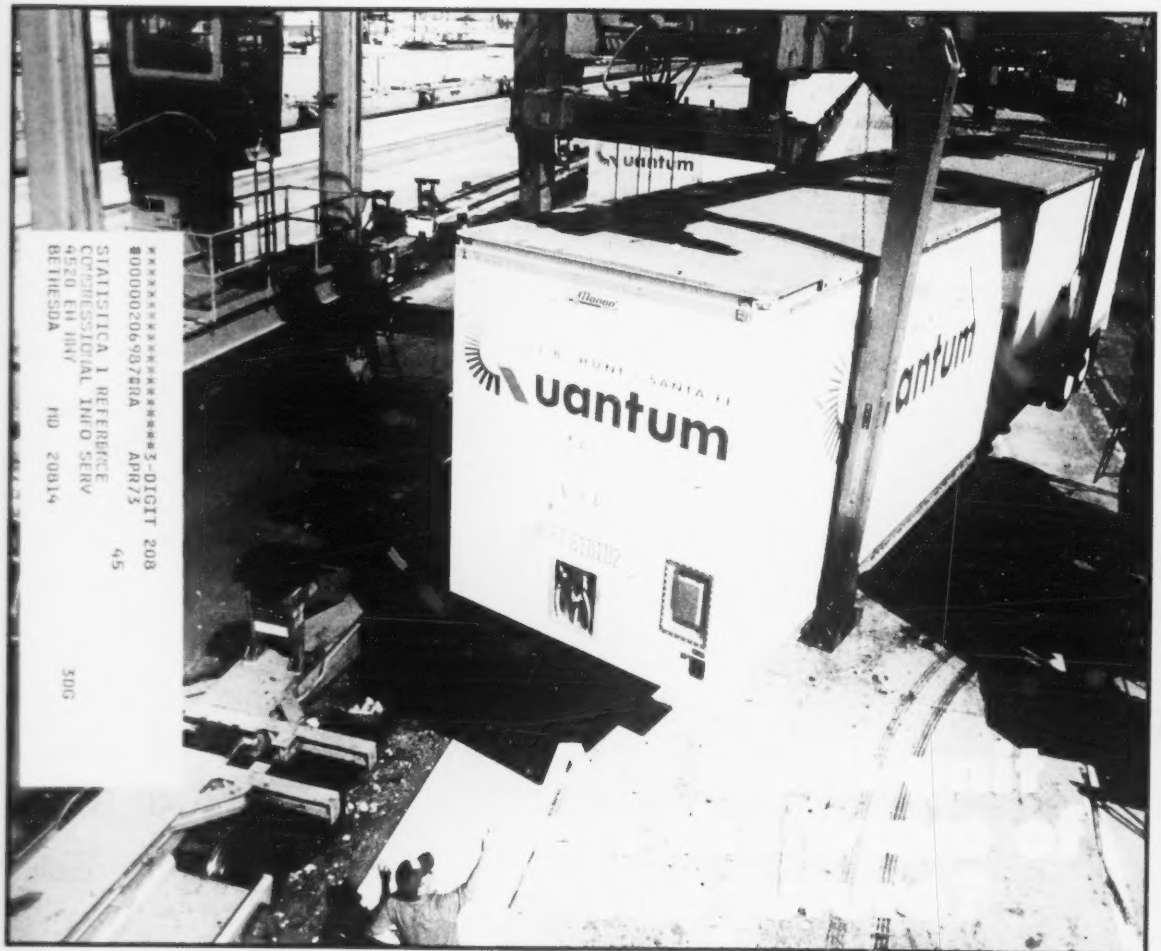
Facilities

Port of Los Angeles: Awarded a $36 million contract to Morrison Knudsen for construction of a container terminal facility on 100 acres of port property. Work is to be completed in early 1992.

October 1990

Railway Age

...for the new age of railways and rail transit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What's behind the bi-level boom

Saving fuel: Here's how

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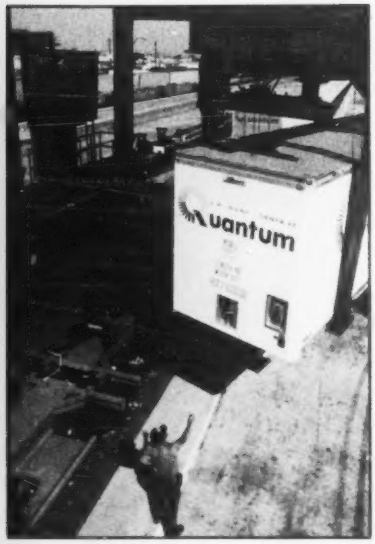

26 Multi-unit cars: Wave of the future?

Pioneered by Santa Fe, the articulated intermodal car is fast becoming standard. As supplier R&D continues to overcome objections to articulation, the concept is spreading to other rolling stock.

31 Fuel savers: The payoff

The OPEC oil embargo helped put railroads on a fast track to fuel conservation. The result has been a 36% increase in ton-miles per gallon. The current crisis could result in new gains.

39 What's behind the bi-level boom

To get more capacity without additional infrastructure investment, commuter operators are turning to bi-levels. One question: Are double-deckers of gallery cars best?

46 EMD locomotives succeed in UK

A British quarrying company, unhappy with power supplied by British Rail, acquired five heavy-haul EMD units. Now, a second company has placed a similar order.

49 Utah maps intercity LRT

A Salt Lake City line utilizing existing railroad right-of-way would be the first segment of a system that would eventually extend to Provo and to Ogden.

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MARKET OUTLOOK

Equipment

Australian National Railway: Has received the first of 14 new diesel-electric locomotives, based on the General Electric Dash-8 technology, ordered from the Australian builder, A Goninan. The order is valued at $25 million. Goninan has announced that it will design GE-technology locomotives for the whole southeast Asian region.

Chicago Central & Pacific: Under a 15-year contract valued at $25 million, Utility Fuels Inc. of Houston will supply and maintain 220 coal hopper cars for CCP. CCP will use the combination rotary and bottom dump cars to move coal from Wyoming's Hanna Basin to generating plants in the Chicago area. UFI, a subsidiary of Houston Industries Inc., currently owns and operates more than 2,300 cars which transport coal from Wyoming to Texas.

CSX Transportation: Placed an order with Bethlehem Steel's Freight Car Division for 550 50-foot, 5,300-cubic-foot capacity, high-side coke cars. Delivery is to begin in October (Details, p. 20.)

Norfolk Southern: Placed an order for an additional 50 Amtech reader systems for fourth quarter delivery, bringing to 241 the number of such systems ordered by NS since December 1988. More than 4,000 tags have been installed and are being utilized for locomotive tracking and end-of-train monitoring.

San Diego Trolley: Plans a multi-year purchase of 100 new light rail cars similar in design to the 71 cars in its present fleet, all of which were supplied by Siemens-Duewag. The first of the new cars are to be delivered in the fall of 1992. While not specifying a builder, the Metropolitan Transit Development Board in its Sept. 5 announcement said it would follow a standard two-step procurement procedure.

Southern Company Services: Ordered W.H. Miner Division's AutoMac® single linkage bottom discharge systems to be installed on 546 new aluminum coal unit train cars being acquired from Thrall Car. Miner Crown S.E. draft gears have also been specified for the cars, which will be assigned to Alabama Power Co.

Union Pacific: Ordered 100 liquid tank containers for its intermodal domestic BulkTainer service. UP will acquire 75 6,300-gallon and 25 5,600-gallon IMO-1 containers at a cost of $3.5 million, with deliveries to be completed by next January.

Revenue freight carloadings

Commodity	Sep. 15 week	Sep. 8 week	Sep. 1 week	Aug. 25 week	Aug. 18 week
Grain	26,857	22,363	26,917	27,527	26,750
Other farm products	1,765	1,004	935	861	869
Metallic ores	16,089	16,254	17,840	17,260	17,014
Coal	137,979	121,718	133,158	134,789	132,319
Crushed stone, gravel and sand	16,779	14,134	16,326	16,868	16,796
Nonmetallic minerals	10,232	8,421	9,573	8,880	8,564
Grain mill products	10,273	9,418	10,554	9,972	10,308
Food and kindred products	8,811	7,548	8,811	8,468	8,740
Primary forest products	10,095	8,336	9,967	9,630	9,666
Lumber and wood products	6,089	4,815	6,631	6,164	5,895
Pulp, paper and allied products	10,212	10,374	10,714	9,882	10,381
Chemicals and allied products	28,519	26,279	29,414	29,449	28,660
Petroleum products	5,777	5,185	5,625	5,605	5,311
Stone, clay and glass products	10,804	9,381	10,683	10,386	10,700
Coke	5,992	5,746	6,066	5,925	6,166
Metals and products	10,556	8,688	10,944	10,455	10,344
Motor vehicles and equipment	19,684	15,428	17,611	17,125	15,651
Waste and scrap materials	9,354	7,027	8,873	9,038	8,650
All other carloads	7,266	5,735	7,481	6,728	6,367
Total Cars Loaded	**353,133**	**307,854**	**348,123**	**345,011**	**339,151**
% change from previous year	2.4	.1	(1.6)	(.8)	(1.3)

		% change
Cumulative total: 37 weeks	12,490,627	1.2

Estimated revenue ton-miles (billions)	21.5	18.6	21.1	21.0	20.6
% change from previous year	5.9	3.3	1.9	2.4	1.5

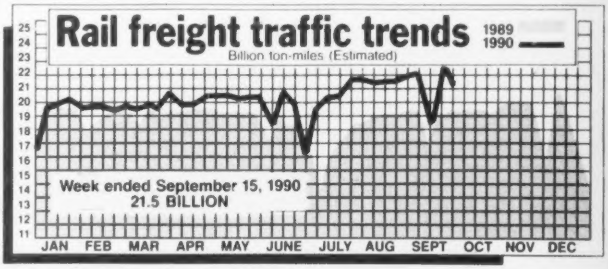
Total:	**1990**	**1989**	**% change**
37 weeks	739.1*	713.4	3.6

*revised to reflect reported ton-miles for 1st and 2nd Quarter 1990.

Intermodal traffic

	Sep. 15	**Sep. 8**	**Sep. 1**	**Aug. 18**	
Trailers	70,072	58,425	69,442	66,038	64,074
Containers	57,361	47,773	55,261	57,167	56,203
Total	**127,433**	**106,198**	**124,703**	**123,205**	**120,277**
% change from previous year	4.7	6.8	2	5.7	3.1

		% change
Cumulative total: 37 weeks	4,340,026	3.6

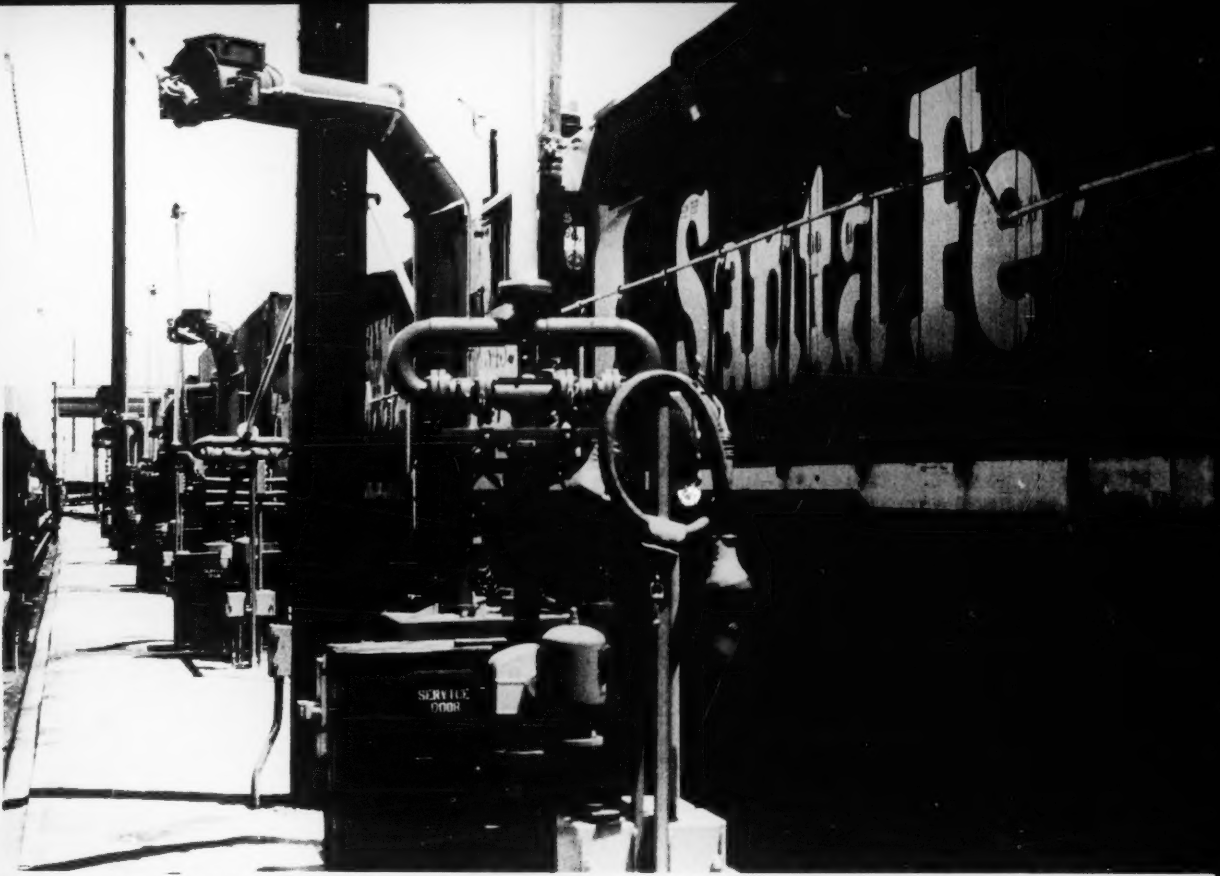


Source: Association of American Railroads

Facilities

London Underground Ltd.: Awarded an 18-month, $5 million contract to ICF Kaiser Engineers of Oakland, Calif., and the British firm of Acer Consultants Ltd. to provide electrical and mechanical design engineering services for a proposed $2 billion, 10 mile extension of London's Jubilee subway line.

Memphis Area Transit Authority: Will use a $50,000 grant from the Federal Railroad Administration to help pay for a study of the feasibility of using Illinois Central's Central Station in downtown Memphis as an intermodal passenger terminal which would accommodate Amtrak, a proposed new light rail system, buses, and airport limousines.



In 1989, railroads purchased about 3.2 billion gallons of diesel fuel at an average price of 56 cents per gallon. By July 15, 1990, the price had dropped to 50 cents. On Aug. 2, Iraq invaded Kuwait—and by Aug. 15 the per gallon cost of diesel fuel had climbed to 82 cents.

Fuel savers: The payoff

A 50% jump in diesel fuel prices has underscored the wisdom of fuel-saving steps taken after the OPEC embargo. Tools are available for new strides in fuel efficiency.

At some point, perhaps after yet another "crisis," U.S. planners may finally realize the folly of depending so heavily upon offshore sources of oil. The current crisis, with the Iraqi invasion of Kuwait, is the third in less than 20 years, and it finds the U.S. with close to 50% dependence upon foreign oil, up from about 30% at the best point after the most recent crisis.

Railroads and railway suppliers have known what was happening and what was likely to happen and have acted to make significant improvements in fuel efficiency.

Fuel availability was one driving factor, availability that could be cut off by another embargo by OPEC nations, especially those in the Persian Gulf region. Fuel price was a second driving factor, with prices peaking at $1 per gallon in 1981 and then slowly dropping to about 50 cents per gallon before rising by 50% or more after the Iraqi thrust into Kuwait. Thus far, since the Aug. 2 invasion, the highest price known to be quoted to a railroad was 98 cents per gallon, but motor carriers were having it even worse if they were buying at the pump, with prices of $1.25 per gallon and more.

Actually, while the fuel price increases were hurting railroads badly, railroads were in much better shape than they would have been 10 or even five years ago to absorb the blow of increased cost.

• **More miles with less fuel.** There are a number of numbers to be considered:

—In 1980, railroads got 235 ton-miles per gallon of fuel. In 1989, railroads got 320 ton-miles per gallon, an increase of more than 36%. Put another way, during that period, railroads reduced fuel consumption by 19% on a 10% increase in ton-miles.

—As a percentage of operating cost, fuel accounts for about 7% for railroads, but about 11.5% for over-the-road motor carriers.

—In total, railroads account for about 2% of the nation's petroleum consumption, while big trucks eat up more than 14%. And railroads, with that lower fuel consumption, produce far more transportation service in terms of ton-miles.

The railroad actually is the most fuel-efficient form of surface transportation, a lot more efficient than trucking and more efficient than barge transportation in many instances when circuitry and movements up-river against the current are considered. Even when comparisons are made against the best that motor carriers can offer today, railroads come off as the most fuel-efficient: Rail double-stack operations, for example, are about 2.5 times as efficient as a

Two leased Oakway EMD SD60s lead eastbound Seattle-Chicago SeaLand double-stacks in Burlington Northern Train No. 8 over summit of Rocky Mountains at Montana's Marias Pass. The EMD-GM 60 Series units, like the GE Dash 8s, are said to be up to 20% more fuel efficient than their predecessors.

Photo: Bruce Kelly

tractor with a 48-foot trailer and 1.7 to 2.1 times as efficient as a tractor with twin-48 trailers.

- **Power plays.** What accounts for the railroad advantage?

—Improved, more fuel-effective motive power from both General Motors' Electro-Motive Division and from General Electric, with Generation II locomotives just coming into the market with their promise of great fuel savings.

—Improved training of locomotive engineers in train-handling techniques designed to help them get the job done with significant savings in fuel.

—Renewed emphasis on the not-so-simple matter of shutting locomotives down when they will not be used rather than letting them idle. This has a fuel-saving benefit. It also has an emissions-reducing benefit, and that's another side of the locomotive-fuel and locomotive-operation story.

Consider first what the locomotive manufacturers have been able to accomplish.

GM-EMD, for example, can show an improvement of about 11% in the fuel efficiency of its 40 Series during the big years of production for those units. Looking back to 1980 and using it as a base-100 year, with the introduction of the 50 Series and then the microprocessor-controlled 60 Series in 1984-85, the fuel-efficiency rating is down to about 85. At the same time, EMD says, the 60 Series locomotives have demonstrated the highest reliability of any series EMD has produced.

How many of the high-efficiency GM-EMD and GE units are in service? A few years ago, the numbers were small. But with deliveries over the past several years and with retirements and sales of older units, a reasonable estimate now is that these high-performance units may account for about 15% of the total Class 1 railroad motive power fleet.

As chief mechanical officers point out, what you get on a load-box isn't necessarily what you get in actual operation, in the real dynamics of train operation.

But Santa Fe's assistant vice president and chief mechanical officer, Doug Sizemore, believes that his road has effective ways to meter and measure and he says that the GM-EMD 60 Series units and the GE Dash 8 units are 17% to 20% more fuel-efficient than the locomotives that were being delivered in the late 1960s and early '70s, for a fuel-efficiency improvement averaging 1% per year for the past 20 years.

That's just for the machine itself—the locomotive—not considering fuel savings made possible by improvements in train-handling and dispatching.

But Sizemore believes that more can be done. The locomotive builders' target, he says, should be an improvement of up to 2% per year in fuel efficiency.

Norfolk Southern was the first road to order the GM-EMD 60 Series and GE Dash 8 units when they came onto the market, and NS Vice President-Mechanical Don Mayberry seems reasonably pleased with what these units have done, although he—like other chief mechanical officers—notes that a lot of factors contribute to improvements in fuel efficiency and it's not possible to credit the locomotive alone for improvements.

Like Santa Fe and a number of other roads, NS has a shutdown policy that's enforced for units that aren't going to be used for even fairly short periods of time, and NS also has put in a 50-mph speed limit for freight trains, this done some time ago and not as a result of the current situation on fuel. NS has an engineer-training program that's helping in fuel conservation, and all of the factors coming into play show positive results.

Years ago on Norfolk & Western, Don Mayberry recalls, the ratio of gallons of fuel per 1,000 gross ton-miles was 1.9. In 1983, the ratio was 1.77, and for the first four months of this year it was 1.57 gallons per 1,000 GTM, and NS has had improvements in the ratio in just about every year since '83.

Now, NS has added another weapon to the arsenal, an IITRI TS-2M simulator which is housed in a 38-foot motor home and will be used systemwide for engineer training.

And, as it happens, a number of railroads have been looking at fuel-saving techniques in the training area for a number of years.

As just one example, back in 1981 Burlington Northern put together a fuel-saving training program, using a Train Dynamics Analyzer. BN took the program on the road, and it soon began to see an improvement in fuel-use efficiency that went above 10% per year, savings that have been continued.

That program, almost a decade ago, had locomotive engineers "operating" over their usual territory, then getting training and then operating again. Now, Mike Voelcker, BN's director-technical training, has improved facilities and equipment, and engineer-trainees at Overland Park, Kan., are being taught to do it right the first time, on IITRI simulators.

Train dispatchers could also be trained in ways to pace trains to save fuel, and this is a

Diesel fuel consumption and cost

(Amounts shown in thousands)

Year	United States	East	West	Average Cost Per Gallon (cents)
1955	3,393,103	1,674,646	1,718,457	9.53
1960	3,471,780	1,751,398	1,720,382	9.03
1965	3,742,370	1,873,537	1,868,833	9.10
1970	3,807,663	1,804,939	2,002,724	10.73
1975	3,736,484	1,718,119	2,018,365	30.00
1979	4,080,758	1,754,784	2,325,974	57.60
1980	3,955,996	1,605,715	2,350,281	83.00
1981	3,774,239	1,514,058	2,260,180	100.22
1982	3,178,116	1,291,485	1,886,631	95.43
1983	3,137,295	1,209,892	1,927,403	83.12
1984	3,388,173	1,305,545	2,082,628	82.57
1985	3,144,190	1,221,215	1,922,975	78.34
1986	3,039,069	1,155,010	1,884,059	49.23
1987	3,102,227	1,194,242	1,907,985	53.81
1988	3,182,267	1,175,648	2,006,619	49.15
1989	3,190,815	1,141,006	2,049,809	56.27
1990 (July 15)				50.02
(Aug. 15)				82.00

Source: AAR

part of their training. But existing schedule and train-operation requirements may be limiting what dispatchers can do, and so it may be that real savings will come if and when BN adopts the Rockwell International ARES system for advanced train control.

Watch BN, because more things are going to be happening in this area.

- **A widening arsenal.** Everybody who talks about railroad fuel efficiency and the improvements in mpg ratings talks about the new-generation locomotives as a contributing factor.

But there are many others that are also working to enable railroads to produce more ton-miles per gallon of fuel.

You could look at concrete ties, at improved-geometry turnouts, at rail lubrication, at the increasing use of lighterweight freight cars (mostly aluminum), at improved blocking and dispatching procedures, at better matches of power to trains and, of course, at improved training of operating employees.

NS
NORFOLK SOUTHERN
Locomotive Simulator

Engineer-trainees are instructed in train handling (and fuel-saving) techniques with locomotive simulators. Norfolk Southern's new computer-based IIT Research Institute TS-2M simulator will be housed in a 38-foot motor home.

You could look at what GM's Locomotive Group and GE are putting on locomotives. You could look at what other vendors such as Woodward Governor are putting on locomotives, Woodward with its Complete Locomotive Control (CLC) system which is applicable to GM or GE retrofits or remanufactures.

Railroads need the best that builders and other vendors can produce in order to improve energy efficiency, both to save money and to gain competitive advantage.

But railroads and every other petroleum user will be fighting against the "trading" market that has developed. In the 1970s, oil markets were pretty tightly controlled and were made up of markets with long-term contracts.

Now, as the *Chicago Tribune* recently noted, the New York Mercantile Exchange has become the world's largest energy exchange, and "oil has become the world's largest cash commodity, traded freely and fiercely in a huge spot, or physical market."

Just about everything railroads have done over the past five to 10 years has added to their energy-efficiency advantage.

But what's been done can't be the end of the story. Chief mechanical officers, chief transportation officers, chief executive officers, want to see even better results.

And the environmental problems remain to be addressed, in terms of locomotive efficiency and locomotive emissions.

This could be a killer. In the trucking industry, making engines cleaner has resulted in a loss in efficiency that has to be made up somewhere else. In the automobile industry, manufacturers have been able to meet emission and miles-per-gallon standards only by downsizing cars and reducing weight.

Those things are hard to do, when you're talking about a locomotive.

A railroad locomotive, classed as an off-road diesel vehicle, has not really been regulated except as regards smoke. But this will not last, and railroads, locomotive builders, and sub-system suppliers will have to deal with it. The "dealing" could come first in California, but it will have to be handled elsewhere eventually.

Are equipment manufacturers and training personnel capable of handling the problems that are coming, with regard to fuel supply and price and with regard to emission regulations?

They're working on it. What railroad officers and railway suppliers are trying to accomplish in many ways makes more sense than what government is trying to do. ■